The Milling World

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A FRENCH DISC MILL.

THE operation of one of the leading disc mills in France is described by "Pappenheim's Mueller Zeitung" as follows:

REDUCTION OF DRY GRAIN.

The operation of the discs closely resembles that of the corrugated rollers, and the first break is looked upon as a finishing touch to the cleaning of the wheat; its purpose is 1) to split the kernel longitudinally and to remove the dirt and dust held in the crease; 2) to roll the kernel for the purpose of pointing it and thus remove the most brittle part of the bran together with the beard and dust attached to it. But little flour is formed between the second and fifth break; the coarse middlings are reduced with ordinary burrs or smooth rollers, while the product of the sixth break is passed between discs for the purpose of reducing the bran. After the first break the feed is purified in a cylinder covered with wire gauze. The time of operation is about equal in each division. From the time that the grain is fed to the first disc until the time when it was completely reduced in the different apparatuses, occupied for a trial quantity of 3516 kg., 11 hours, 50 minutes; equal to 295,774 kg. per hour.

An examination of the temperature of the mill rooms, gave 61 deg. F.; during the first break the temperature of the feed was increased to 68 deg.; during purification it was again cooled and exhibited in the second break 56 deg.; in the third 52 deg.; in the fourth and fifth 50 deg., and in the last 48 deg. When the whole plant was in operation, six breaks, six purifying cylinders, an aspirator and the necessary elevators, the engine indicated a consumption of 19.6 horse power. This gives per metercentner and per hour 6.626 horse power. When the plant ran empty it consumed 11.8 horse power, consequently the reduction necessitated 7.8 horse power or 2.637 horse power per metercentner and per hour.

The first break produced 1.0142 per cent. of black flour. The second, third, fourth and fifth together 24.1714 per cent. of dark flour, and semolina in sufficient quantity to produce 7.1286 per cent. of flour. The rest consisted of semolina, 9.5428 per cent.; fine middlings, 29,7142 per cent.; coarse middlings 3.2429 per cent.; coarse bran, 12.7714 per cent.; fine bran, 8.5714 per cent. The sixth break gave 1.0142 per cent. of flour and the reduction of the coarse bran 2.2 per cent. The total weight thus accounted for equals 99.3714 per cent., and a loss of only 0.6286 per cent. The reduction of the middlings was performed on four sets of burrs. The temperature of the air was 50 deg. F., while the feed between the stones registered 58 deg.

To summarize we find 1) the consumption of power: For transmission of grain and first break, 6.626 horse power; for reduction, 0.491; for the disintegration of middlings 1.799; total 8.916 horse power. 2). Quantity of produce: Bakers flour 68 per cent.; black flours 7.0 per cent.; refuse 23.11 per cent.; waste 1.09 per cent., total 100 per cent.

REDUCTION OF DAMP GRAIN.

An equal quantity of damp grain was reduced on the same machinery in 13.48 hours, using 7.491 horse power per hour per metercentner, with the following results, not counting the middlings:

	Per cent.
Black flour from first break	1,257
Flour from second to fifth break	27,542
Flour from sixth break	2,400
Flour from semolina	5,372
Flour from the bran	2,971

Classified the result would be 1), as to power: For transmission and first breaks 7.491 horse power; for reduction 0 401 horse power; for disintegration of middlings 1.051 horse power; total 9.033 horse power. 2). As to the product: Mixed flour, 50 per cent; black flour. 4.61; refuse, 24.27; waste, 1.12; total, 100 per cent.

GRAIN TARIFFS IN GERMANY.

The "German Agricultural Press" vindicates the motives of the monster petition of the farmers recently presented to the Parliament for an increase of the tariffs on grain. Protective tariffs, it says, are primarily designed for the purpose of keeping the price of certain articles on a basis which allows their manufacture at home. Secondarily they are a source of income to the government. Between Jan. 1 and Dec. 31, 1882, we have imported 20,498,158 metercentner of cereals, equivalent to an equal sum of marks collected by the treasury. This demonstrates in itself that our tariffs do not fulfill the prime object of their introduction, i. e., the protection of the home industry. In spite of the small demand, for we had an abundant harvest, Germany is flooded with foreign grains and our own products remain unsold under the pretext that they have been injured by the weather. We had hoped that our tariff would be sufficient protection, but the Russian railroads reduced their rates and the sum which the grain merchant now pays for tariffs, he saves in railroad freights; consequently he can sell at the same price as before. This certainly proves that the Russians, and not our consumers pay the duty. If the tariffs are increased, our consumers will notice it undoubtedly, but that is irrelevant as compared with the advantage that accrues to them by having their home agriculture in a flourishing condition. No other industry can exert so little influence upon the price of its own products as agriculture. High tariffs will give at least a fair prospect of keeping the prices on a fairly profitable basis, and if the abundant supply of foreign countries enable them to undersell us even then, the government will derive a revenue sufficiently large to justify a reduction of taxes as an equivalent to the losses sustained by agriculture.

The importation of grain has increased 27 per cent. as compared with last year, although large stores of indigenous grains were on hand in fine condition, and this certainly demonstrates the fallacy of the theoretical free-traders that "the imports are governed by the demand." With our present means of communication the demand can never exceed the supply, but the importation is regulated by the necessity for purchase on the part of foreign countries. It is not at all improbable that the time will come when the desire for cheap grain will send so much of our cash money into foreign lands that our own banks become completely exhausted, and a famine may result in spite of the lowest grain prices. The above mentioned import in itself represents about $50,000,000, and a number of other importations more than counterbalance the value of our exports.

There has never been such an array of factors accumulated for the increase of prices, as we find at the present time. Many sections of the country have only half finished their fall plowing, owing to prolonged rainstorms. Good prospects for crops are a rarity; the most fertile districts in the river valleys have been submerged for weeks. Stored grains have been damaged extensively; large quantities of cereals are fed directly to stock, because they have been injured by rain, and in spite of all this, there is no apparent tendency to improve the condition of the low prices, because the expected imports from without are more than able to cover any deficiency at home.

A TREATISE ON FLOUR.

VI.

GENERAL CONCLUSIONS.

1. Independently of all external causes the wheat contains a ferment which is capable of inducing changes in a natural manner. This ferment seems to originate in the vicinity of the embryo, and possesses all the qualities of organized ferments. It is not affected by a dry heat of 212° F., but boiling water destroys its activity. Moisture and warmth are indispensible for its development, and a temperature of about 75° F. is most favorable. It acts upon the gluten, liquifying it. In correct milling this ferment is separated from the product with the bran, and the better a flour is bolted the less ferment it will contain. A strong friction between the burrs, or too high a velocity, inducing a finer reduction of the bran particles, will also induce the presence of a larger amount of ferment in the flour. The ferment produces the rapid changes which we find in the so-called "heated" flours. A reduction on rollers prevents such a mishap.

2. The acidity in old flour is not, as has been generally accepted, the cause of the waste of gluten which it contained, but its effect; it does not precede, but follows it.

3. Gluten seems to be present in the grain, along with starch, in its original form, and I no not believe that it is produced by water acting upon a glutenous substance. Gluten can contain different quantities of moisture, and salt, for instance, can retard its separation, while dilute acetic acid accelerates it. This two-fold action operates under the following conditions: Good flour mixed with salt water does not allow the immediate separation of the gluten; if, however, allowed to rest for a while and sufficient time is given to the gluten to absorb water, it can be separated entirely. It can even be obtained immediately, when its hydration is accelerated by an addition of moist gluten to the dough. An addition of a solution of acetic acid liquifies the gluten immediately, and it cannot be again made insoluble for the purpose of separation.

4. Heated flour contains the gluten in its original form; the ferment can act but slowly owing to the absence of water; a supply of moisture and an increase of temperature, however, causes rapid changes.

5. The conditions necessary to keep flour for a long time or to produce flour that will retain its good quality, consist in the use of good healthy wheat, hard wheat if possible; a complete separation of bran and flour, and a careful protection against heat and moisture in the respective storage rooms.

THE COST OF RAISING WHEAT.

The low price of wheat has caused the enquiry to be made in many countries: what is the cost of producing a bushel of wheat. This question the Agricultural Commission of Ontario attempted to answer in 1881, says the Montreal Times. "The average yield of fall wheat," the Commission reported, "is now probably a fraction under twenty bushels per acre, and of spring wheat about twelve bushels per acre." Compared with other countries in a situation similar to that of Ontario, twenty bushels appears to be a large yield for fall wheat; it is very much more than the average of the United States. But if we take the figures of the Commission, what do we find in the present state of the market. At seventy-five cents a bushel, an acre of fall wheat would bring $15, and an acre of spring wheat $9. If we turn to the Commission's estimate of the cost of raising an acre of wheat, we find that, upon neither crop is there much profit, and on one there is a loss. We quote: "Charging interest on the value of land or rental, all the labor and the manure, it is probable that the cost of raising an acre of wheat, by what passes generally as fairly good farming, is from $15 to $16 per acre, and of spring wheat from $13 to $14 per acre." If the value of the straw be added at an estimate mentioned, $1.50 an acre, we should have $17.50 as the total value of the crop of an acre of fall wheat, and $10.50 as the value of an acre of spring wheat. There would still be a profit of $2 an acre on fall wheat, and a loss of $3 an acre on spring wheat. If we strike a balance between spring and fall wheat, we must, on the basis of the above figures, conclude that wheat growing in Ontario scarcely pays at present prices. The price assumed—seventy-five cents a bushel—for both kinds is more than the farmers throughout the country have been realizing, and if the actual figures they have received in some localities were given, the result would be still worse.

But if it be true of the average that wheat growing in Ontario does not pay at present prices, it is far from being universally true. Crops of thirty and even forty bushels an acre are sometimes grown, and when these results are got without much additional cost there must be a good profit for the farmer. The widest differences in yield are sometimes found within the limits of a single county. The commission reports of Essex and Kent that "the cultivation of spring wheat has been practically given up. Formerly it was a good crop of twenty-five bushels or upwards to the acre, but to use the words of Mr. Stephen White, it has of late years been a failure altogether." Mr. McNair, whose home is in Essex, says, on the contrary: "The land is so rich that we just keep cropping away, and we get all the crops we want." And this process is still carried on in a county in some parts of which it has resulted in an ability to grow spring wheat at all. The difficult crop is, as a rule, not spring but fall wheat, which has to run all the risks of a variable winter, and if wheat can be grown at all spring wheat can. Professor Brown is of opinion

that "the yield of wheat is steadily on the increase in the older parts of the Province," a change which he attributes to the growing of more roots and raising more cattle; and Professor Buckland thinks that Ontario farmers cultivate too much land for grain and retain too little pasturage for sheep and cattle.

BUSINESS PROSPECTS.

In no year since the resumption of specie payments by the Government on the 1st day of January in 1879, have the general business interests of the country been as depressed and unprofitable, and in every way as unsatisfactory as they have been in the year now drawing to a close, says the New York Produce Exchange Reporter. Fortunately, however, the outlook for the ensuing year is somewhat more favorable.

Beginning with the resumption of specie payments in 1879, the country emerged from a long period of financial depression, liquidation and business distress, generally, to enter upon an era of unparalleled prosperity, and, let us add, intense speculative activity in nearly all departments of trade.

The first check given to the great business prosperity which followed the return to specie payments, was the prolonged drought and resulting unfortunate harvests of 1881. But this really national disaster instead of checking speculation, gave it renewed impetus, especially in food products, and prices were driven to fabulous heights. Meanwhile, railroad building had run rampant, the foundries and iron and steel manufactories prospered as seldom before, and the production of textile fabrics, clothing, boots, shoes and other staple articles of manufacture kept apace. But it is a law of trade, as well as of nature, that reaction follows extremes, and 1884 has been essentially a year of shrinking values and liquidation, aggravated and intensified since harvest by numerous business failures the world over.

The carnival of speculative and industrial activity in 1879, 1880, 1881, and in a rather less degree in 1882, led to overproduction in the principal departments of manufacture, hence, the accumulation of stock and decline in prices, the great number of failures, the short time and lower wages, and for many no work at all. Stocks are at maximum and the purchasing power of the people at a minimum. Overproduction leads to underconsumption, in that it lessens the ability of the people to purchase, and thus, like a two-edged sword, cuts both ways, and plunges the business and industrial pursuits of a country into a state of depression and general financial liquidation. In its effect upon the material interests of the country, the influence of the increased production in this year's wheat and corn crops, and the average improvement in the quality of both, has not yet been fully felt. It will serve to diminish the cost of living on the one hand, and on the other, in many departments of industry, further curtail the requirements of labor, and not unlikely further reduce the wages of it.

In the wheat trade, prices have generally been free from those violent fluctuations, the decline being steady and with scarcely a reaction, the total loss being about 35 cents per bushel, or a decline from $1.75 to 79c. per bushel on No. 2 red winter, representing the extremes in this market, January giving the highest and November the lowest value. In corn and oats fluctuations have covered rather a narrower range than wheat, corn receding from 70c. in September to 48c. in November, and oats from 42⅝c. in February to 31c. in October. But November and December show some improvement in the markets.

The business of millers has been extremely unsatisfactory throughout the year. And this may to a great extent be attributed to the same cause that has so greatly depressed other manufacturing industries, notably those of iron, steel, woolen, cotton, leather, etc.—overproduction. Altogether, the business of the year has been very discouraging. Where actual losses have not been incurred profits have been small, failures have been numerous and confidence greatly impaired. It is easy enough to describe the present depressed and unsatisfactory condition of the business affairs of the country—to tell what nearly everybody knows and feels, but it is not so easy to explain the why and wherefore of it, or the way in which a better state of things is to be brought about. Some ascribe our misfortunes to the tariff and excessive and needless taxation, and there is little doubt but that both might be modified to the benefit of the people. But in discussing the situation we think the press generally lay too little stress on the effect upon our commercial and manufacturing industries of bad harvests.

As compared with agricultural production in an average of years, the loss to this country arising from the disastrous harvest of 1881 was, no doubt, directly and indirectly, fully one thousand million of dollars. In that year nearly, if not all of the crops grown on our soil were deficient, and many of the more important of them greatly so, wheat, corn, oats, rye, barley, cotton and tobacco, being alike largely short, as were also all kinds of vegetables. This year the decline in stocks and property here has been three thousand million dollars. The blow came upon us when business was "booming," and few heeded its significance. Not until 1882-83 were the effects of this great disaster fully experienced. On top of the misfortunes entailed upon the country by the bad harvest of 1881 came the poor wheat and corn crops of 1883.

WHY HE BLAMED MOSES.

"Vhell, sooch luck as my brudder Moses has had in Chicago vhas enough to discourage an honest man." he said, as he shook out and folded up another pair of pants.

"Trade bad?"

"Trade vhas so flat dot two dollar wests go begging at six shillings, but dot vhas all right. Moses vhas a good man to hole on. Der trouble vash he got burnet oudt."

"And no insurance?"

"More ash four tousand dollar. But der company breaks down dot same day, und so he lose eaferyting."

"Too bad. If Moses had known that the company had failed there wouldn't have been any fire, I suppose?"

"Of course not. I blame Moses dot he doan' look in der daily papers und keep himself posted."—Wall Street News.

PRICES OF OUR BREADSTUFFS SINCE 1878.

The grain crops of the Uunted States, as reported by the National Agricultural Bureau, for four years past were:

	1884.	1883.
Wheat	500,000,000	420,000,000
Corn	1,800,000,000	1,551,000,000
Oats	570,000,000	571,302,400
Barley	44,000,000	40,186,099
Rye	25,000,000	28,058,583
	1882.	1881.
Wheat	502,789,600	380,280,090
Corn	1,624,917,800	1,194,916,000
Oats	475,655,700	416,481,000
Barley	45,000,000	41,161,330
Rye	20,000,000	28,704,750

The price of wheat in the United States during 1884 continued almost steadily downward, says Bradstreet's. A conspicuous exception was in June, when a corner of that option was attempted which drove prices of No. 2 red at New York up to the then artificial level of $1.15 per bushel, and again, beginning on the 27th of December, when began that advance which amounted to 3¼c. per bushel at the close on December, 31, and which secured an advance of 10c. per bushel by January 5 prior to any reaction. The gradual advance in the price of wheat beginning in 1879 and culminating in 1883 was due to a succession of favorable harvests in the United States, while those in the United Kingdom and elsewhere were less so, thus causing an augmenting demand abroad for our grain and dragging prices rapidly upward. This stimulated increased acreage at home and abroad in exporting countries, and Russia and India began to make inroads on our shipments to the United Kingdom, the principal foreign customer. In the year preceding 1884 this was shown by decreased exports from this country and a decline in price. In 1884 the tendencies noted were continued, and stocks were allowed to decline (wheat and flour) in the United Kingdom from 28,000,000 to 16,000,000 bushels (the equivalent) which, owing to the general industrial and commercial depression at home and abroad, the excellence of the rye and potato crops in Europe—which supplant wheat as a food staple more largely than here—and to a general indisposition to anticipate wants in this or any other branch of commerce, combined to cause, in large part, the extreme depression noted in prices for wheat the world over. The advance noted just at the close of the year has been claimed by those favoring the view that a high level of prices is warranted at once. This is based on the holding of surplus stocks by a strong bull party, the small supplies on hand abroad, and the likelihood of a declining visible supply hereafter. The extreme depression in prices in 1884 has seldom been equaled in previous years—certainly not within the range of our table of prices.

Prices of cash wheat at New York in 1884 have touched the extremes as follows: No. 2 red elevator sold highest on January 5 at $1.14. No. 2 red (current option), in store, sold highest on January 4 at $1.11. No. 2 red, in elevator, sold lowest on November 18 at 81¼c. No. 2 red (current option), in store, sold lowest December 8 at 78¼c. On May 5, June wheat sold at $1.12⅝a.$1.15, as explained above, due to pressure from an attempt to corner the grain. No. 1 spring wheat at Chicago was lowest on December 15, when it was quoted at 69½c, (lowest since 1862, when 64c. was touched), and highest February 13 at 96c. per bushel. No. 2 spring corn at Chicago was lowest December 1 at 34½c., and highest September 30 at 87c. per bushel. No. 2 oats at Chicago were lowest December 6 at 23c., and highest April 28 at 34¼c. per bushel. No. 2 rye at Chicago was lowest December 1 at 51c., and highest June 18 at 65½c. per bushel. No. 2 barley at Chicago was lowest December 8 at 53c., and highest April 18 at 75½c. per bushel.

Indian corn prices during 1884 have been depressed, particularly at the west, in farmers' hands, to a degree which appears strange when viewed in the face of the comparatively light visible stocks during the closing weeks of the year. High prices for Indian corn ruled perforce during 1882, owing to the short crop of the year before. The crop of 1883 was but an average one and was not rich in quality, and prices were thereby longer maintained than was the case with wheat. During 1884 the quotations for No. 2 mixed at New York in the early autumn were about where they were in the opening months of the year, after an average decline in the interval of about 5c. per bushel. The autumn brought with it a revelation of the rapidly waning visible supplies of Indian corn, and the possibility of cornering the grain was so apparent that that fact was itself a preventive. Farmers continued to withhold their corn even after December 1, and prices very unexpectedly (in view of the small size of stocks) to decline, the extreme low figure for cash corn ranging some 16c. per bushel below the highest during the year. Late in December a squeeze was begun which rapidly threw prices up to 80c. per bushel, an artificial price and fully twice as much higher per bushel as the sum named above in excess of the lowest for the year. The low stocks in this country, in the face of the advance in wheat, steadily upheld the price over the close of the year at about 75c. per bushel. Farmers in Nebraska and Kansas have used their corn as fuel, preferring to do so rather than sell it at 14c.a.18c. per bushel, draw it to market and buy fuel at an equivalent of 20a.22c. per bushel and haul the latter back. Late advices intimate that heavy shipments of corn from Nebraska are beginning, and that a rush of corn to market may be expected. The extreme prices for No. 2 mixed at New York in 1884 have been 48c. lowest, sold November 21, and 81c. highest, sold December 30.

Quotations for flour have gone lower than ever before for export. Shipments of American flour abroad continue to increase and, as pointed out in "Bradstreet's" a few weeks ago, present the spectacle of a larger and larger share of our surplus wheat going abroad annually in that form. The price of flour has kept pace on the downward track with that of wheat, governed as it is by the price of English-made wheat in the London market, and which it has continually undersold. The larger share of that going abroad is of the medium and lower grades, the bulk of the better grades and fancy stencils being taken up here. Improved processes of manufacture and production on a large scale have enabled millers to reduce the price of flour step by step with that of wheat.

WHEAT AS CATTLE FEED.

Wheat will be fed to stock this year very much more generally than would appear from ordinary observation. It is healthy and productive of good results when fed, from cattle down to poultry. When chopped and fed to beef cattle, for instance, it will cause them to put on flesh rapidly and thus return two-fold in comparison with the ordinary market price for wheat. Occasionally a farmer will be found who avers that he can raise wheat profitably at ninety cents a hundred. It will be seen, however, that such men have large ranches, and raise, in most instances, nothing else in any quantity. For an ordinary farmer, then, it is much more remunerative to feed wheat than sell it at the price we have quoted. An exchange says regarding this: "A more pressing point for farmers to consider just now is the utility of making use of a great deal of their wheat crop at home for stock-feeding purposes, instead of pressing it on the market under the disadvantageous circumstances now existing. Wheat meal may be made an admirable substitute for oil cake in fattening cattle and sheep; hence those farmers who have been accustomed to make heavy outlays in the purchase of oil cake for winter feeding of stock will act imprudently if they do not abandon the system this year and fall back on their heavy stock of home-produced wheat as a substitude. Wheat meal is reckoned even better than barley meal for pig feeding, and it would be economy to keep back nothing but tail barley for pig consumption this season, marketing the whole of the head corn and making use of wheat largely for the production of pork. Prices of store pigs have been low for some considerable time and remain so at present. Farmers of an enterprising turn will take advantage of this circumstance by buying largely store pigs and converting them into pork, chiefly by the consumption of wheat meal.

In some instances the ranchmen have organized and purchased a feed mill, as in

the case of the Platte Valley Grange with results beneficial to all concerned. Wheat turned into beef is more profitable than when sold to the millers, and, this being so, it requires no Solomon to decide as to the best manner in which to dispose of it.—Colorado Farmer.

A REMINISCENCE.

Nearly twenty-four years ago I saw the last Democratic President drive down Pennsylvania avenue in a landau, and at his side loomed the marked figure of his successor, Abraham Lincoln, going to be inaugurated. The great avenue was crowded with a host most hostile. From the overhanging windows leaned thousands of spectators, curious rather than enthusiastic, and on the roof of houses were Government detectives watching lest the new-comer be shot dead in his carriage at Mr. Buchanan's side. I hurried to the east front of the Capitol, and there were tens of thousands standing in the mud, acres wide, as close as they could be packed. Pretty soon the official procession came through the Capitol, and out on the broad steps above us—Chief-Justice Taney, bent and wizened, Mr. Chase's white head and imposing form, some of the generals of the army, members of the Senate, and conspicuous among them the tall President-elect and Stephen A. Douglas, gravely holding his successful rival's hat! The ceremonies of introduction were short, then Lincoln rose—a fine target—his address in his hand. I never saw a more attentive assembly. Men a thousand feet away leaned forward to listen. I was near a lamp-post, and standing on a large stone at its base was James W. Nye—"Jim" Nye—the famous orator and wit, afterwards Senator from Nevada. At the end of every sentence or two, Mr. Lincoln paused deliberately, and the murmurs of disapproval ran through the crowd, with broken ejaculations and cries of "Too late!" "Twon't do!" Towards the close this became very annoying, and when the speaker's last words invoking charity were followed by a growl in the crowd and applause around the steps, Nye arose and with a shout called to himself the attention of those around him. He said, with grave earnestness: "Hear ye! That's the best speech that has been delivered since Christ's Sermon on the Mount!" The occasion saved it from irreverence.—New York World.

EXPLOSIVE DUSTS.

"Flour looks innocent enough," an overseer remarked while watching the removal of some barrels of flour and other grains from a large warehouse.

"That depends upon how it is cooked," the reporter suggested.

"Just so. It is dangerous enough in that way; but I was thinking of it as an explosive. Just look across the room. You see, when the sun rays come in the air is loaded with a find grain dust, and if you were provided with microscope eyes you would see yourself fairly surrounded with atoms of grain of all kinds. Now suppose you take a dried ear of corn and fire it. It burns very slowly and the chances are that it will go out. Shell it, or take the kernels off, and it burns much quicker. Suppose now we grind the corn, it will burn quicker still, say in a minute; but if you pulverize it, reduce it to a powder or dust, and ignite it, it goes off like a flash, and has great expansive power. That is just the case here. If the room becomes overcharged with dust, and is ignited, it goes off, blowing the house to pieces.

"One of the most striking cases occurred several years ago when the Washington Mill caught fire. Those who knew anything about it just got out of the way as quick as they could; powder wouldn't have sent them any faster. Blow up? Well, I should rather think she did. The walls of the mill were solid stone six feet thick, and when the explosion came they were just like paper, and the roof, made of sheet-iron, was blown so high from one mill that it landed more than two miles from the spot where it went up. Of course it was helped by the wind, but the force exerted was shown. Men have been blown out through windows, hurled through the air, and the walls of a building completely demolished by a man's lighting a pipe in a big grain-house.

"A curious accident once happened in Scotland in a large house. A man walked in with a cigar in his mouth, and in a second the room seem to be filled with fire and a terrible roar, but a minute later it cleared off. With the reception of a singeing, not a person was hurt, but every one of the four walls was flat on the ground, and the roof had been lifted bodily and dropped 200 feet away. In such cases there must be a fire first. The dust burns, and a powerful heat is created, and then follows the terrific expansive force that nothing can withstand. The explosion in Barclay street several years ago may be accounted for in this way. In the manufacture of candy, sugar and starch are used in great quantities. Their dust accumulates, and when lighted might easily display power enough to hurl a building to atoms."

"Has the explosive power of different dusts ever been determined."

"Yes," the flour man replied. "Professor Peck, the chemist, has made some experiments that demonstrate the enormous power of sawdust, various flours, starch, and grain of all kinds. In one of the experiments he took three-quarters of an ounce of starch, and, by raising it as dust in the air, ignited it in a compartment intended to represent a room. When exploded it threw a box weighing six pounds twenty feet in the air You can judge yourself of the power of the material. Half an ounce of starch ignited in the same way was shown by the professor to lift the cover of a box and a heavy man standing on it three inches.

"One of the most dangerous materials is the wheat-dust of flour-mills. When burned it goes off like a flash. One of the first movements in making flour is to rattle the wheat, and pass a heavy draft at the same time over it, to carry of the highly-inflammable dust. Yet, despite all care, the air becomes heavily loaded with it. Prof. Peck has shown what flour would do by taking a box with a capacity of two cubic feet and placing in it a little flour, the light of a lamp entering through a hole in one corner, and the muzzle of a bellows through the other. The cover of the box was nailed on and a man took his place on it. The professor then worked the bellows, and the small amount of flour filled the air in the box, as dust, the fac-simile of a dust-laden mill being produced. The flour immediately ignited from a lamp, and in a second the cover was blown off and the man lifted several inches into the air, while a blaze of fire burst out from all sides. A number of interesting experiments were performed by the same gentleman, showing that in our large manufactories where dust was likely to be formed there lurked a power as dreaded as dynamite. Peck states that one pound of carbon and two and two-thirds of oxygen, when they combine to produce carbonic acid, will evolve heat sufficient, if applied to a perfect heating engine, to lift nearly 600 tons ten feet into the air. Then he assumes that if 40 per cent. of the flour is carbon it would require 2½ pounds to accomplish this result."—N. Y. Sun.

PACIFIC COAST WHEATS.

The conclusion was drawn from analyses completed last year at the Agricultural Department at Washington, that Oregon produced a wheat extremely poor in albuminoids, although the appearance of the grain was fair and large; and it was surmised that grain from the whole Pacific slope might possess the same peculiarity. Surprise having been expressed at this statement, it was suggested that an analysis should be made of a selected sample of Oregon wheat, of the crop of 1883. For this purpose a specimen was chosen which the Northern Pacific Railroad presented to its guests at a dinner in Walla Walla, during the excursion given by the road in the autumn of 1888. The result was a complete confirmation of previous analyses. The percentage of albuminoids found was 7.70, and this determination having been confirmed by duplication, the wheat was proved to be the lowest in albuminoids of any that have been examined in this country. Its appearance was fine, but the size of the grain smaller than one usually expects in Oregon wheats. This peculiarity of poverty in albuminoids among Oregon wheats is confirmed by the analysis of a new process flour made in that State which was found to contain only 7.18 per cent.

All attempts to obtain typical samples of the crops of 1883 from California having failed it was necessary to fall back on a series of wheats from that State in the Museum of this Department, which were of the crops of 1875 and were exhibited at the Exhibition at Philadelphia. While more recent specimens would be more desirable, there can have been no changes in the amount of nitrogenous constituents, the chief alteration of the grain being in the amount of water which it would contain.

The average composition of California wheat from San Joaquin, Contra Costa, and El Paso counties, taken from ten analyses, is as follows;

Wheat of 100 grains	grames..	3.6924
Wheat	per cent..	10.78
Ash	do....	1.86
Undetermined	do....	76.47
Albuminoids	do....	10 94
Total		100.00
Nitrogen	per cent..	1.75

This average is not as low as that for Oregon, but is far below (1 per cent) the average of the country. It represents but a limited portion of the State, and while it points to the correctness of the assumption of the poverty of the wheats of the Pacific slope in albuminoids it does not render it positive, as several of the specimens contain over 12 per cent. In the report of the Census for 1880, Professor Brewer, in his collection of analyses of cereals, gives four of California wheat, two of which, described as hard, are the celebrated Macaroni wheats and contain 13.76 and 12.84 per cent. of albuminoids, and two are white wheats containing only 8.25 and 9,69 per cent. From these results it would seem that the hard wheats are more able to collect nitrogen than the soft white varieties, and as the specimens from Oregon have been all of the latter kind, the low percentage of nitrogen may be due to that fact. It would be of interest to examine a hard red wheat grown in that State.

SITUATIONS WANTED.

Advertisements under this head, 25 cents each insertion for 25 words, and 1½ cents for each additional word. Cash with order. Three consecutive insertions will be given for the price of two.

SITUATION WANTED.

By a man who has had fifteen years' experience in running grist and merchant flour mills. Address, Wm. H. WOLLERTON, McElhatton P. O., Clinton county, Penn. 411

SITUATION WANTED.

By a young man who has had 2½ years experience in a feed and flouring mill. Address, G. G. MARVIN, West Hebron, Wash. Co., N. Y. 10

SITUATION WANTED.

A situation to learn the millers trade. Am 23 years old Best of reference given as to character. Address, FRANK VAN VLEET, Tyrone, Schuyler county, N. Y. 1013

SPECIAL ADVERTISEMENTS.

Advertisements of ***Mills for Sale or Rent, Partners Wanted, Machines for Sale or Exchange,*** *etc., etc., cost 1½ cents per word for one insertion, or 4 cents per word for four insertions. No order taken for less than 50 cents for one insertion, or $1 for four insertions.* ***Cash must accompany the order.*** *When replies are ordered sent care of this office, 10 cents must be added to pay postage.*

YOU CAN BUY THESE CHEAP.

Three McCully Corn Cob Crushers.
The above articles are brand new, in perfect condition, just as they left the factories, and will be sold very cheap for cash. Address S. 30, care THE MILLING WORLD, Buffalo N. Y. tf

FLOURING AND SAW MILL PROPERTY FOR SALE.

I have two water power flouring mills and two saw mills for sale. All in No. 1 order, and in fine locations for grain, lumber and markets. Persons wanting such property will do well to investigate these. Address, J. H. CRAIG, Baldwin, Jackson county, Iowa. 1114

FOR SALE CHEAP.

Four-run water power grist and merchant mill, with a good custom. All modern improvements to make first-class flour; machinery new; in a good grain-growing section on railroad. Would sell all or one-half. For further information inquire of GILGER & LONG, Hadley, Mercer county, Pa. 813

I HAVE

680 Elevator Cups, 4½x8½,
700 Elevator Cups, 4x8,
For which I have no use, and will sell cheap. They were made by W. P. Myer, of Indianapolis, Ind., and are entirely new. If you want a bargain write me. Address, J. S. K., care THE MILLING WORLD, Buffalo, N. Y. tf

FISKE'S BOLTING REGULATORS

Keep the bolting cloth clean in all kinds of weather and in handling all kinds of stock. Increases the bolting capacity from 25 to 50 per cent., and prevents making specky flour. No shafting, belting or gearing required. Any one can attach it. I have a few of these devices which I will sell cheap. *They are brand new.* Send for description and price. Address MILLWRIGHT, care THE MILLING WORLD, Buffalo, N. Y. tf.

FOR SALE—SPECIAL BARGAIN.

Two new first class Engine Lathes, each back geared, screw cutting, rod feed, power cross feed compound rest, complete with full set screw cutting gears, large and small face plates, center rest, centers, wrenches, etc., etc. All ready for instant shipment. Sold by reason of change in plans; are of first class make and direct from builders' hands. One 16 ft. bed by 26 inch swing, price $625. One 16 ft. bed by 20 inch swing, price $416. Send for cuts, W. E. DREW Manchester, N. H. 24

FOR SALE.

ONE OF THE BEST BUSINESS LOCATIONS IN THE STATE OF PENNSYLVANIA.

For the next 30 days I offer to sell my steam flouring mill, located at Sunbury, Pa., in close proximity to R. R. track, convenient to connect with short switch. The only mill in Sunbury—a town of 7,000 to 8,000 inhabitants and it being a powerful and still growing rail road centre—having 11 different outlets per rail—it is and promises to be one of the finest locations for a flouring mill in the country. Surrounded by a thickly settled agricultural community, from which wheat can be supplied all the year round to supply the demands of the manufacturing capacity of the mill. The mill is in good shape for a stone mill outfit, but can easily be without any serious expense converted into a roller mill. Having a press of other business on hand I will sell low and on easy terms if applied to soon. Any further information will cheerfully be given by W. C. LYON, Sunbury, Pa. 912

SPECIAL NOTICES

HOW DOES THIS SUIT?

"Cooch's Bridge, Del., Aug. 25, '84.
"Messrs. Thompson & Campbell,
"Philadelphia, Pa.

"Gentlemen: Your machine was sent here against an ——, on condition that we should keep the best, and we tried each machine, and are frank to say that if your machine cost us $500 and the other was offered us as a present we should take yours, as we cannot find a fault with it. The above machine has a capacity of 50 bushels per hour."

We think best not to publish name, but it will be given upon application. Address, KREIDER, CAMPBELL & CO.
Philadelphia, Pa.

BOLTING CLOTH.

Do not order your cloth until you have conferred with us. It will pay you, both in point of quality and price. We are prepared with special facilities for this work. Write us before you order.
CASE MANUFACTURING CO.,
Columbus, Ohio.
Office and Factory, 5th Street, north of Naughten.

The Milling World
Flour Mill and Chronicle of the Grain and Flour Trade.

PUBLISHED EVERY THURSDAY BY

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G. B. DOUGLAS, - - Managing Editor.
THOS. MCFAUL, - - General Agent.

SUBSCRIPTION.

In the United States and Canada, postage prepaid, $1.50 Per Year, in advance; can be remitted by Postal order, registered letter, or New York Exchange. If currency is enclosed in unregistered letter, it must be at *sender's risk.*

To all Foreign Countries embraced in the General Postal Union, $2.25 Per Year, in advance.

Subscribers can have the mailing address of their paper changed as often as they desire. Send both old and new addresses. Those who fail to receive their papers promptly will please notify at once.

ADVERTISING.

Card of Rates sent promptly on application Orders for new advertisements should reach this office on Tuesday morning, to insure insertion in the week's issue. Changes for current advertisements should be sent so as to reach this office Saturdays.

EDITOR'S ANNOUNCEMENT.

Correspondence is invited from millers and millwrights on any subject pertaining to any branch of milling or he grain and flour trade.

Correspondents must give their full name and address, not necessarily for publication, but as a guarantee of good faith.

This paper has no connection with any manufacturing or mill furnishing business. Its editorial opinions cannot and will not be influenced by a bestowal or refusal of patronage. It has nothing for sale, but its space to advertisers and itself to subscribers.

Entered at the Post Office, at Buffalo, N. Y., as mail matter of second-class.

MILLERS' ASSOCIATIONS.

NATIONAL.....	S. H. Seamans, Sec'y.	Milwaukee, Wis.
CALIFORNIA....	F. J. Parsons, Sec'y....	Oakland.
ILLINOIS.....	C. H. Seybt, Sec'y.. ..	Highland.
INDIANA.....	Jos. F. Gent, Pres't	Columbus.
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OUR CLUBBING LIST.

NOTE—*You can save money by availing yourself of the following offers. You can please every member of your family by accepting one or more of the following offers. To save money, and at the same time make the family happy, ought to be the main object of every married man's life. See how you can do this.*

Take these for Yourself.

THE MILLING WORLD, per year.....$1.50

WITH

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American Architect, monthly...	(1.75 " ")	2.75
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American Agriculturist.....	(1.50 " ")	2.50
The Country Gentleman.....	(2.50 " ")	3.50

Take these for your Family.

THE MILLING WORLD, per year.....$1.50

WITH

Harper's Magasine.....	($4.00 per year)	4.50
Harper's Weekly.....	(4.00 " ")	4.70
Harper's Bazar.....	(4.00 " ")	4.70
The Century.....	(4.00 " ")	4.50
Frank Leslie's Illus. Newspaper.	(4.00 " ")	4.50
Frank Leslie's Popular Monthly.	(2.50 " ")	3.50

Take these for your Children.

THE MILLING WORLD, per year.....$1.50

WITH

St. Nicholas.....	($3.00 per year)	4.00
Harper's Young People..... ...	(2.00 " ")	3.00

Readers of "The Milling World" will confer a favor upon the publishers, and derive material benefit themselves, by mentioning this paper when opening correspondence with advertisers. Drop us a postal card when you have written to an advertiser, give us his name, and then we will put you in the way of getting the benefit. Don't forget this.

THE mill-furnishing trade is once more looking up, at least inquiries touching machinery and prices are being made with considerably more freedom than for a few months past. There are still some mills in the country to be supplied with machinery.

THE almighty dollar has such a firm hold of all people, ourselves included, that it is worthy of note to find that four hundred years ago, the first number of that necessary contributor to human happiness was coined in Tyrol, Austria, by the Archduke Sigismund.

CANADIAN millers are again complaining; they are forced to admit that of American wheat it takes a smaller quantity to make a barrel of flour than the Ontario product; whether this is due to the quality of the grain or to the system of milling, they don't tell us, but they do not feel very kindly towards the American grains, and cry for help to the government, that supposed-to-be all-potent power to adjust evils.

IN spite of the recent discouraging report on the Hudson Bay route to Europe, Canadians are sanguine about the possibilities of this new short outlet for American produce, and hope that the observations which are carried on by the government party at various stations on the shores of the Hudson Bay, during this winter, will furnish the necessary material for the thorough comprehension of the navigation of Hudson Bay and Straits. The country is said to be rich in deposits of gold, silver, copper and lead, and unless the mean temperature of the year is too low, its settlement may prove an important factor in the development of Canada.

THE losses by fire to flour mills and grain elevators during the month of December amounted to $221,500, exclusive of all losses less than $10,000, according to the fire tables of the Commercial Bulletin, while the total destruction amounts to about $11,000,000. This added to the fire waste of the preceding months, we have the sum of $112,000,000 as the value of the property turned into ashes in the United States and Canada during 1884. Excepting the years of the Chicago and the Boston fires, this has been the most destructive year since any statistical record has been kept, and it is an open question to know where it will end, because the losses increase from year to year.

THE reduction of grain freights by some of the western roads leading into Chicago, as reported last week, has been supplemented by a similar action affecting the grain producers of Iowa. After a careful review of the situation by all the representatives of the roads interested in the question, they decided that, wherever the freight on coarse grain from any point in Iowa to Chicago is 15 cents or less, the reduction shall be one cent per 100 pounds; for a rate from 16 to 20 cents, the reduction shall be 2 cents; from 21 to 24 cents, 2½, and from 25 cents upward, three cents per 100 pounds of freight. This is not as favorable as the reduction reported last week, especially as wheat is not included in the new schedule and has to pay the old rates.

PROBABLY most of our readers know the firm of Kreider, Campbell & Co., machinists and millwrights at 1080 Germantown Ave., Philadelphia. Something over seven years ago Mr. Kreider died, and his interest in this firm ceased by settlement of his estate, but in the interests of the business it was not thought necessary to change the firm name. On the first of the current month however, the present proprietors, Messrs. Geo. S. Thompson and Archibald Campbell, decided it to be best to drop the name of Mr. Kreider, and to change the style to Thompson & Campbell. No change of any kind however, has been made in the business; its capital, manufactures and mode of conduct being as heretofore. Our readers will note the change of firm name in the advertisement on another page.

THE legislature of Minnesota will soon be called upon to decide whether in the future the elevators throughout the state are to be declared public warehouses and operated by persons with a license from a State Board of Trade to be instituted for that purpose, and who shall be placed under a bond to ensure the faithful performance of their duties. The question of a uniform grading of wheat throughout the state will also come up for consideration. There cannot be any doubt that laws enacted to such an effect will prevent a large amount of ill feeling between farmers and elevator men during the next harvest season, but whether the former will derive as much benefit from such legislative measures as they hope, is another question and their expectations may be lowered considerably before another twelve months have passed.

THE reports which reach us from various sections of the country of the resumption of active operations in industrial lines are most gratifying. In many, perhaps most instances, the money-earning power of the labor thus given field for exercise is materially less than it was a year ago, but if a market for its products is found this condition of affairs will last only so long as change for the better is impossible. Activity in demand for the products of labor will permit of higher prices therefor, but so long as the market must be nursed and coddled little inclination will be manifested by employers to increase wages. The resumption of active operations in our manufacturing establishments is evidence of confidence in the future If the markets for which they cater show similar confidence, a prosperous condition of business will soon exist. Meantime if there is anything you want to buy, now is the time to buy it, always excepting railroad stocks.

IN our issue of Dec. 11, our Minneapolis correspondent, in his regular letter, made the following statement, viz:

"Robert W. Dunham, son of the editor of the London *Miller*, has returned home after being a very brief time in the Washburn A. His return is attributed to ill health, though it seemed to us more of a case of dislike for work."

The position held by our correspondent is of such a nature as to enable him to speak "by the card" in any statement he may deem it of interest to make, hence we permitted the item above given to appear. In doing this, however, it appears that we and our correspondent have done injustice to Mr. Dunham without, however, intention or malice. We deeply regret this, and take much pleasure in giving publicity to the following letter which will serve to place Mr. Dunham right before our readers.

OFFICE OF
WASHBURN, CROSBY & CO.,
PROPRIETORS OF THE
WASHBURN FLOURING MILLS,
MINNEAPOLIS, MINN.

Editor Milling World:

DEAR SIR: In your issue of Dec. 11, 1884, "Caleb" cast a disagreeable imputation upon R. W. Dunham, son of the editor of the London "*Miller*" by intimating that his departure for home was due rather to being unwilling to work than to ill health, the given cause. Will you correct this? Mr. Dunham was a willing worker and was greatly disappointed when the doctors ordered him out of the mill. Yours truly,

JAMES MCDANIEL.
Head Miller Washburn Mill A.

THE Iowa Millers' Association will hold its annual meeting on Jan. 21, at Des Moines. A good programme is expected and special arrangements will be made for first-class entertainments at low prices. "These conventions are generally what we make them" says Secretary Lord in his circular, "and we hope that every miller will post himself on some question and explode it in the convention." There is nothing like an explosion in these dynamitic times, and a young infernal machine placed in the convention hall would perhaps induce a never-before known activity among the millers attending the meeting. But we do not doubt for a moment that such heroic measures will be unnecessary, and that every miller of Iowa will be able to do his share towards the general entertainment by bringing with him a diminutive explosive, which in the aggregate would then be sufficient to insure a meeting as lively as the most vivid imagination could desire, and enable the citizens of Des Moines to form an idea about how these things are done at "millers' conventions."

AN English observer states it as the result of his observation that one bushel of grain per acre is destroyed annually by small birds, and, as a natural inference, he claims that if the number of small birds were reduced one half only, the annual saving of grain-growing countries would be immense. Now this is one of those misleading statements which are apt to do more damage than good. We have large numbers of small birds which are of actual benefit to the grain fields, because they eat the insects which otherwise would destroy the cereals as well as other fruits. Many of those birds do not touch one single kernel of grain, but carefully pick out all the grubs as well as the full-grown insects. How the destruction of such birds would prove a benefit to the grain grower, we fail to see. Other species of birds, such as the robin, although they subsist largely on grain during the latter part of the year, more than counterbalance this loss by feeding their young exclusively on grubs and insects and obtaining their food in the early part of the year from the same source. Certainly there are birds, such as the English sparrow, which are neither useful nor ornamental, and whose absence from grain fields is more beneficial than their presence, and whose numbers could be reduced with profit all around, but it is wrong to place all the smaller birds into this one class. It is perfectly safe to predict that if by any artificial means the number of birds were reduced one-half, the grain grower instead of losing one bushel per acre, would lose considerably more, perhaps all, by increased insect depredations.

SOME of the croakers who predicted from the beginning that the New Orleans exhibition would never equal the Centennial, state with apparent relish that the managers are already several hundred thousand dollars in arrears. It is well worth while to ask whether money-making is the sole object of an international, or, in fact, any other exhibition; or are we all so incurably mercenary that we are unable to see beyond the pocket book. Does the opportunity to compare the best of our own products with the choicest of other nations count for nothing? Is the stimulus valueless which is exerted upon our manufacturers by the knowledge that, although we excel other nations in many respects, there are yet a number of branches where improvements are necessary for us? But even aside from the many advantages obtainable by comparison and contact, the financial matter in this case is not so hopeless. The exhibition has been open less than a month, and the best part of it is to come yet. So there is really no need to despair because the first few weeks show a deficit of a few hundred thousand dollars, for the travel towards New Orleans will probably not commence before next month, so far as the Northern States are concerned. In addition to this, it would be a simple, but interesting problem to find out how much benefit the citizens of New Orleans derive from the exhibition from the money spent by visitors, even if we make allowance for, say $1,000,000 deficit at the exhibition proper. It would be undoubtedly a safe prediction to state that the figures would be on the right side of the ledger to the credit of the city.

NEW INVENTIONS IN MILLING APPLIANCES.

APPARATUS FOR SEPARATING DUST FROM AIR.

Letters Patent No. 309,964, dated December 30, 1884, to Ernst Kuehne, of Chicago, Illinois. The purpose of this invention is to provide better means for separating dust contained in air, but more especially the dust in flouring-mills as it comes from middlings-purifiers, or otherwise. One method for attaining this end at the present time is by the centrifugal force, which drives the dust against a fabric or perforated plates, which will permit the air to pass through, but catch the dust; also, air containing the dust has by direct force been driven against the fabric which catches the dust and permits the air to pass through. The inventor claims to have discovered and put into practical use a machine which obviates all objections hitherto urged against well-known types of devices for this purpose and says: The compartment of the conveyer which receives the air and dust is open from end to end; but the compartment through which the dust is conveyed is closed at both ends, and the dust is discharged through the periphery of the case. Better to facilitate the separation of the dust, a brush is employed on the wider spiral, and an elastic or flexible packing is attached to the narrow spiral, both to run against the case or a roughened flexible lining in the case. Further than this, to prevent so long a conveyer as might otherwise be required, a reactionary air-chamber is placed at the air-discharge end of the conveyer, and above this chamber and communicating with it is placed a fan to regulate the velocity with which the air is to escape. In some instances—as, for example, where there exists a strong blast into the conveyer, as where it connects with the discharge-pipe of a middlings-purifier—I find it preferable to fit the conveyer to operate in a case having the form of a truncated cone; but for all ordinary purposes a conveyer constructed to rotate in a cylindrical case will well answer the purpose, the enlarged air-discharge at the tail of the conveyer being wholly for the expansion of air, so as to lessen its outward velocity before leaving the conveyer.

MACHINE FOR SEPARATING DUST FROM AIR.

Letters Patent No. 309,965, dated December 30, 1884, to Ernst Kuehne, of Chicago, Illinois. It has been the custom heretofore to force air containing dust against a fabric which will catch the dust but let the air pass through; and this inventor has heretofore invented and patented a double conveyer having two separate passages through it, one for the entrance of the dust and air and one for the collection of the dust from the air. In this the conveyer-case was stationary and the conveyer a rotating one, and the wind or current of air traveled in an opposite direction to that in which the separated dust moved. The present invention differs from those mentioned, and all others, in that the exterior case rotates on a stationary conveyer and carries the dust into an upper chamber, where it is swept off by a rotating brush, from which it falls into a conveyer, by which it is discharged from the machine. This invention is difficult of intelligent description without illustration.

MACHINE FOR MIXING FLOUR.

Letters Patent No. 310,126, dated December 30, 1884, to James Dawson, of Wilmington, Delaware. This invention has relation to machines for mixing flour and the sweepings or leavings in the different portions of the machinery in a flour-mill, for the purpose of feeding them back to the bolting-reels again. An inverted conical chamber is placed upon the top of a flat conical chamber, which is mounted upon suitable supports, and a shaft is journaled vertically in the chambers, axial to them, in bearings in the bottom of the flat conical chamber, and in bearings in a spider at the wide-open top of the upper inverted conical chamber. This shaft receives a rotary motion by any suitable gearing or connection. The portion of the shaft within the inverted conical chamber is provided with a number of radial arms, which are connected at their ends with downwardly-inclined rods which are parallel with the walls of the chamber, and which revolve very close to the same. A cone revolves with and slides upon the shaft at the junction of the inverted conical chamber and of the flat conical chamber, and the upper portion of the cone is provided with a spiral flange which is revolved within the lower end of the inverted conical chamber, while a corrugated portion of the cone registers with a corrugated portion in the upper end of the flat conical chamber, forming a grinding mechanism. The lower reduced portion of the cone has an annular groove, into which the inner end of a lever, which is pivoted in the side of the flat conical chamber, projects; and the outer end of this lever is formed with an eye, through which a screw projects, which screw is secured to the base of the machine, and two hand-wheels having threaded central perforations, fit and turn upon a screw —one above and one below the eyed end of the lever—serving to adjust the angle of the lever, and consequently the proximity of the corrugated portion of the cone to the corrugated portion at the top of the flat conical chamber. A number of arms project from the lower end of the vertical shaft near the bottom of the lower chamber, and these arms are provided with brushes or similar sweepers or gatherers, which may sweep the mixed flour into the discharge-aperture in the bottom of the conical chamber. The flat conical chamber is provided with a hand-hole, covered by means of a plate and yoke, through which access may be had from the exterior of the chamber to the interior of the same. The flour and sweepings and leavings from the several machines of a flour-mill may all be fed into the upper inverted conical hopper, where they are stirred and mixed by means of the stirrer-arms and the inclined rods, which travel around the sides of the chamber, whereupon the spiral flange upon the cone feeds the mixed material to the corrugated portions of the cone and of the top of the flat conical vessel, between which corrugated portions any lumps or coarser particles are ground, whereupon the mixed article falls into the flat conical chamber, from which it is swept out by means of the sweeping-arms into the discharge-spout, which carries it to the bolting-reel, where it again may be subjected to the bolting process.

MIDDLINGS-PURIFIER.

Letters Patent No. 310,181, dated Jan. 6, 1884, to John M. Case, of Columbus, O., assignor to the Case Manufacturing Company, of same place. This invention relates to machines for separating the impure matter from middlings. Two or more riddles, are mounted within the same frame, said riddles being adapted to tail off independently or successively, as desired. The riddles are supported by hangers in any customary manner, and are operated, preferably, by means of belt, fixed at its ends to the tail of each riddle, passing over anti-friction rollers, and provided with a central strap or yoke, surrounding an eccentric on the driving-shaft. A walking-beam or rocker, is pivoted at its center on the opposite end of the frame, and has its ends fixed to the heads of the respective riddles in such manner that by the operation of the eccentric the riddles are thrown in opposite directions, thus by their isochronous action counterbalancing one another and avoiding violent shaking of the machine. The result of this arrangement is that bracing in the mill is largely dispensed with and the machine runs noiselessly without jar or undue friction. The walking-beam is pivoted upon a bolt having a tightening-nut, by which means slack in the belt or looseness in the connections can be taken up at will. A conical aperture in the beam allows the free oscillation of the same board upon its pivot, and a second nut, retains it thereon. On the same driving-shaft is placed a worm, gearing into a worm-wheel on a rotary shaft, which has bearing in brackets on the frame of the machine, and is provided at its opposite extremity with a crank working in a slot in the lower end of a second walking-beam, connected by links to the cleaning-frame. The cleaning-frame is provided with a number of wires, stretched from end to end of the frame, and passing at one end around a roller, in such manner that the wires may be tightened to the degree necessary to cause them to perform their work properly. When the machine is in operation, the riddles being vibrated up to a rapid speed, (ordinarily about one thousand reciprocations per minute,) these wires are caused to tremble or vibrate against the cloth in such a manner as to produce a light whipping action, which, while not severe enough to produce any injury to the cloth, is sufficient to cause the material flowing over the cloth to be kept in a constant state of boiling agitation, whereby the fibrous material is all caused to be submitted to air-currents passing through the cloth, and is easily drawn away. The trembling motion of the wires also acts to keep the meshes of the cloth entirely free at all times. The tendency of this cleaner is not only to remove the material from the under side of the cloth, but by its slight whipping action, to dislodge any light material which may be attached to the upper surface of the cloth, so as to permit it to be carried away by air currents. The suction of air up through the cloth, caused by the fan acts to lift the cloth by pressure on the under side, thus increasing its vibratory motion upon the wires in such a manner as to assist very materially in the thorough cleaning of the cloth.

ROLLER-MILL.

Letters Patent No. 310,127, dated December 30, 1884, to James Dawson, of Wilmington, Delaware. This invention has relation to belt-tighteners for roller-mills having two sets of rollers revolving at different rates of speed in each set; and it consists in the improved construction and combination of parts of such a device, by means of which the belt of the two rollers of the two sets which revolve with the same speed may be tightened or loosened without interfering with the belt of the other two rollers. The invention is one of mechanical detail, difficult of explanation without illustration.

ROLLER GRINDING-MILL.

Letters Patent No. 310,236, dated January 6, 1885, to William H. Wakeford, of Baltimore, Maryland. This invention relates to a roller-mill composed of two corresponding lines of two or more rollers each, the respective rollers of each line being connected and driven one from the other by universal-joint couplings, so that each roller is independent of every other roller so far as removal or adjustment is concerned. This improvement consists of certain novel combinations for adjusting and spreading the adjustable rollers, which combinations, to intelligently describe would require illustrations.

ROLLER-MILL.

Letters Patent No. 310,374, dated January 6, 1885, to Samuel R. Campbell, of Buffalo, N. Y. This invention relates more particularly to that class of roller-mills which are employed in the reduction of grain and similar substances, and has for its object to facilitate the adjustment and manipulation of the rollers in such manner that the roller which is mounted in movable bearings can be readily separated from the opposite roller for stopping and starting the mill without affecting the adjustment of the stationary roller, and so that each end of the movable roller can be separately adjusted, and both ends can also be simultaneously adjusted, whereby the movable roller is rendered capable of a quick and free movement toward and from the opposite roller, and at the same time is rendered capable of a very fine adjustment in order to adapt the rollers to the desired work. The invention is one of mechanical detail. The inventor shows its application to a line of rolls and says: When two or more roller-mills are arranged side by side, it is often desirable that the rollers should be separated simultaneously in all the several mills in starting and stopping the same. This is readily accomplished by arranging the adjusting levers in the several mills in a horizontal position and connecting the several levers by a rod or rods. In order to adapt the length of the connecting-rods to varying distances between the levers, the rods are preferably connected by sleeve-couplings, which may engage with right and left hand threads on the adjacent ends of the rods, and permit their ends to be drawn together or separated, as may be necessary in order to connect the levers. If preferred, the coupling-sleeves may be attached to the rods by set-screws.

ROLLER-MILL.

Letters Patent No. 310,480 dated January 6, 1885, to Noah W. Holt, of Buffalo, New York. This invention relates to an improvement in that class of roller-mills which are employed for the reduction of grain, and more particularly to such roller-mills in which one of the rollers is mounted in movable bearings, so that it can be moved toward or from the other roller in adjusting the working-faces of the rollers for grinding or reducing the material to the desired degree of fineness, and also for separating the rollers when the feed is shut off. The object of this invention is to provide means for adjusting the rollers mounted in stationary bearings, so as to render them parallel with the rollers mounted in movable bearings, and to provide means for adjusting the movable bearings of the opposite roller both separately and simultaneously, and to separate the roller mounted in movable bearings from the roller mounted in stationary bearings without disturbing the grinding adjustment.

BOLTING-REEL.

Letters Patent No. 310,483, dated January 6, 1885, to Jesse Warrington, of Indianapolis, Indiana, assignor to the Nordyke & Marmon Co., of same place. The object of this invention is to provide a means for returning the coarse or unbolted material to the end of the reel, into which it is introduced through the reel itself, thus dispensing with the usual separate mechanism. It consists in the combination, with the reel, of a central hollow shaft having conveyer-flights or a conveyer therein, and a head having lifting-wings in the end of the reel, arranged to discharge into said hollow shaft, whereby the usual conveyer outside the reel-chest and the features of construction which its use renders necessary are dispensed with. The operation is as follows: The material

is first introduced into the spout, through the hopper as it leaves the grinding mill, and by means of flights on the shaft is conveyed into the reel, where it is subjected to the usual bolting process. The fine material which passes through the reel is delivered at the lower end of the reel, and by means of wings is preferably lifted to the center into a receptacle and carried off through a spout leading therefrom. The coarser material works along the reel onto the lifting-arms on the head, which raise it up, and, by reason of their peculiar formation, drop it through holes inside the hollow shaft, which, by means of flights (or the equivalent conveyer,) works it back toward the other end, and finally discharges it, from whence it is taken to a mill and subjected to a further grinding process. The process of handling the material is thus confined to a single machine—the reel—instead of employing a separate conveyer, as is usual.

PURCHASING POWER OF WHEAT.

C. Stoddard Smith, writing to the St. Paul Pioneer-Press from Pembina, Dak., says: Sundry articles have appeared in your paper calculated to convince the farming population of Minnesota and Dakota that in spite of the unprecedented low price of their main marketable crop, wheat, they are doing well. The latest appears in your issue of the 22d, in which the writer, following the usual argument, attempts to show that the prices of all (or nearly all) farm supplies have decreased in two years 33⅓ per cent. which is about the same as wheat has declined, and therefore that the purchasing power of the proceeds of the crop remains substantially the same. The average farmer is not much of a business man—not so much as he ought to be. After having sold his crop for what it will bring—40 to 50 cents per bushel, or even less—and comparing the receipts with the outgoes, he is usually of the opinion that he has not only nothing left, but is actually more in debt than at the start. Such reasoning as the above might cause him to rub his eyes and examine his flattened pocket-book, to see if there had not been some mistake made in his settlements. But he would fail to find any cash, and in the face of overdue notes and accounts, theorizing arguments will avail him little. The truth is that all these arguments are founded on two or three fallacies, and their conclusions are as false as the premises. In the first place they proceed on the assumption that a crop of wheat in some manner springs up, grows and matures like apples on a tree, and all that the farmer has to do is to call his family out and gather the crop and take it to the elevator and receive his cash, with which he buys his groceries and dry goods at the reduced rates. Those who know anything about it know that wheat is an expensive crop to raise; that seed, machinery, horseflesh, feed, threshing and labor, all cost or are worth money. With few exceptions these all cost nearly the same in 1884 as in 1882. Labor is a principal item, and has been as high the past season as ever before, or higher. The cost of raising wheat is variously estimated at 40 to 50 cents per bushel; and if it is sold for that price—that is, if the income only equals the outgo, where is the margin of profit to the farmer? I assert that thousands of farmers have sold wheat this fall far below the cost of production, owing to excessive prices paid for expenses and low prices received for the grain, in many cases cut down five to ten cents by unjust grading, or perhaps by injury, by rains, etc. The average price paid is not nearly 50 cents, as figured, and not over one-half what it was in 1882.

But the statements as to the reduction in prices of supplies do not hold good so far as the farmers of this region are concerned. The farmers, and the merchants too, have been purchasing largely on credit, and although wholesale prices in trade centers have fallen largely, yet it is only within a few weeks that the reduction has made itself at all felt in the retail stores. Merchants selling on credit cannot make low prices, and, in fact, almost all supplies necessary for the crop of 1884 were purchased before any great reduction.

"Phwat's the price of the chicken," says Pat to the grocer. "A shilling, sir," is the reply. "Faith, and in the old country we could buy them for a sixpence." "Why didn't you stay in the old country then," says the grocer. "Faith, and we had no sixpences there at all, at all," says Pat. It matters not to the farmer of the Northwest what the cash quotations are for supplies; after he has sold his crop and paid his expenses, he has no sixpences left. The farming business in 1884 has been carried on at a loss, while the railroads and elevators retain their charges for marketing and handling as fixed when wheat brought $1 or more per bushel, and these charges which are enriching the companies, amount to 25 to 50 per cent of the total value of the crop. One correspondent stated the truth when he said that if this is not changed thousands of fertile acres will relapse into their pristine condition in a very short time.

HARD TIMES.

The present distress in financial matters is felt in all the walks of life. The other day an Irish woman visited one of the finest residences in Bloomington and asked for aid in the plaintive language of one who lacks the necessaries of life.

"Plaze, mum, I am a sooferin', me hoosband was kilt intoirely wid der railroad last summer, an' Oi haint had a blissed dhrop av nothin' to dhrink for three wakes."

"Poor woman!" the lady of the house sympathetically replied. "I know you must have suffered. Times are very hard, now, and I, too, am deprived of even the necessities of life. I have not had but one sealskin sacque this winter, and we are so straightened that I have only had a chance to wear it to the theatre eight times during the entire season."

"Och, begorra!" cried the beggar. "Oi pity yez, an' so Oi do. Poor sufferin' angel, here is a half dollar to go to the show this blissed noight. Oi kin wash an' make a livin', but yerself, poor crather, has to depind upon the charities av a cowld and whoite-livered world."—Through Mail.

SCIENTIFIC AND MECHANICAL

WHICH WAY IS PREFERABLE?

THE question frequently arises, says "The Locomotive," what is the proper way to regulate the draft of a steam boiler furnace, by opening and closing the ash pit and furnace doors, or by means of a damper in the flue leading from boiler to chimney? There is some difference of opinion and practice regarding this matter, which probably arises from differences or peculiarities in the constructive details of various boiler plants, which might make it desirable, or even necessary, to regulate one way in one case, and the other way in another case. Our own preference is decidedly in favor of regulating the draft by means of a damper placed in the uptake or pipe leading from the front end of the boiler, smoke box, or front connection to the main flue. This uptake should be made of wrought iron, and riveted securely to the boiler shell, and the damper should be fitted as close to its lower end, or the tube openings as possible, and be provided with a convenient hand attachment whereby it may be set at any desired point and secured there. There is much less liability of burning out the grates in a boiler furnace when the draft is regulated by a damper, than there is when it is regulated by the ash pit door. For, let the ash pit door be closed tightly, and all circulation of air in the ash pit is stopped, there is nothing to prevent the heat from the layer of incandescent fuel being transmitted down ward and overheating the grates, and overheating means warping, twisting, and cracking of the bars, and we have known them to be melted from this cause.

When, on the contrary, the ash-pit doors are fully open, there is nothing to prevent the free circulation of air throughout the pit, and the bars are kept cool. We recommend omitting altogether doors to the ash-pit, and making the opening through front nearly the full width of the grate, and making a water cavity or trough, at least 6 inches deep in the bottom of the ash-pit. This should be kept full of water, as it has a great effect upon the temperature below the grates. For ease and certainty of regulation, a damper placed in the uptake as described above, possesses great and obvious advantages over any manipulation of ash-pit or furnace doors. Any one who has had charge of boilers fitted up in this manner can readily appreciate the truth of this statement. There is, also, in our opinion, decidedly less loss of heat by infiltration of air through cracks in the setting walls when the draft is governed by a damper in flue than there is when the doors are used for same purpose; for, when ash-pit doors are tightly closed, the draught of the chimney will draw air in through every crack and crevice in the walls, and, this air entering the furnace at all points has a cooling tendency which it is most desirable to avoid. If the ash-pit doors are open, however, any leakage past the damper will readily be supplied by air passing through the fire, which is always the way air should go into a boiler furnace. The damper should always be so fitted and adapted to the boiler, that, when it is tightly closed as far as it can be by the apparatus provided for operating it, it will allow sufficient draft to just keep the fires going, and carry off any coal gas which may be generated in the furnace. The foregoing relates more particularly to boilers used for power purposes, and those plants of such size as to require the constant supervision of an engineer or fireman. With many of the small house-heating boilers, where the draft is automatically regulated, it is deemed expedient by most steam fitters to regulate the draft by the ash-pit door. For boilers of this type, this is undoubtedly a good plan in many cases; with the attention this class of boilers receives, there is probably less danger of filling up a house with coal gas.

LIQUID HYDROCARBONS AS FUEL.

In the course of a recent address at the Society of Arts, Sir Frederick Abel, when dealing with the various industrial applications of science which have taken place in recent years, referred to the use of certain liquid hydrocarbons as fuel for engine purposes. His remarks on this subject were as follows: It is many years since attention was first directed to the advantages indicated by theory, and which appeared practically realizable, from the application of certain liquid hydrocarbons as fuel for engine purposes; and before even chemists dreamt of the possible future value of coal tar as a source of brilliant dyes, attempts were made to apply crude coal tar naphtha as fuel for boilers. Later on crude petroleum, and the heavier and less readily inflammable liquid hydrocarbons remaining after extraction, from coal tar and petroleum, of the portions available for color-producing and illuminating purposes, have been applied experimentally in this direction from time to time, and with some success; the liquid being injected into the fireplace in the form of a spray, by means of ordinary or superheated steam. A successful experiment has quite recently been made at the Forth Bridge works, in working the furnace of one of the air-compressing engines with the residual product of the distillation of shale oil, obtained at one of the largest Scotch mineral oil works.

This butter-like material, liquifiable by heat, for which no use has been found, even for coarse lubricating purposes, and which cannot be ignited by the application of flame in the ordinary way, is allowed to flow through a superheating apparatus, and is thence carried into the fu nace by a powerful jet of superheated steam. The force of the jet draws a powerful current of air into the center of the flames produced by burning the mixture of vapors and of minutely divided liquid; and the result is said to be an almost perfect combustion of the fuel, with total absence of smoke and of solid residue in the furnace. Even at the locality of this experiment, where coal is cheap, it is claimed that an ultimate economy will be effected by the use of this fuel; the cost of labor for stoking being much diminished. This experiment has been valuable as showing that the residual products of British mineral oil works may be utilized with advantage as substitutes for coal. But far more important results have been obtained in this direction in Southern Russia during the last few years. The value of the residual product of petroleum distillation, as an efficient and economical source of steam power has been conclusively established in connection with the marvelous development, by the Brothers Nobel, of the petroleum industry at the Baku works, which are fed through pipe lines of an aggregate length of upward of 60 miles, by the apparently inexhaustible supplies of petroleum of the Aspheron Peninsula.

The residual or heavy oil, which remains after extraction of the illuminating and the lubricating oils from the petroleum, and of which Messrs. Nobel alone now produce 450,000 tons annually, is already used as fuel on upward of 300 steamers upon the Capsian Sea and the Volga, and by the locomotives on the Trans-Caucasian and Trans-Capsian railways. Its use is also extending to other railways in Southeast Russia and to manufactories in Moscow, where it is rapidly replacing English coal. In an instructive paper on the employment of refuse petroleum as fuel in locomotive engines, recently communicated to the Institution of Mechanical Engineers, Mr. Urquhart has shown that, weight for weight, it has 33 per cent. higher evaporative value than anthracite, and that while 60 per cent. of efficiency is realized with the latter, 78 per cent. is obtained with petroleum refuse. The very rapidly continuous extension of the Russian petroleum industry appears to assure a most important future to liquid fuel; and though and though it is hardly likely to compete in this country with coal for locomotive purposes generally, the comparative ease with which its perfect combuation is now insured appears to render it especially suitable for employment in underground railways; while its use in steamers cannot fail to be attended with important advantage in many special services.

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* * The zeal of those who are so anxious to have the government of the United States undertake the construction of a ship canal across the isthmus of Nicaragua might be better understood if this country had any chance of getting any considerable share of the carrying trade throughout the canal, says "Bradstreet's." That no considerable share of that trade would fall to our lot at present, even were the canal already constructed, must be plain, of course, owing to the fact that we have no merchant marine worthy of the name, and would therefore be at a disadvantage in competing for the carrying trade through the canal with other nations whose position in this respect is better established than ours. The revival of our carryin trade, in short, is of more importance to us than the construction of waterways for the commerce of other nations; our need of ships is a more pressing one than our need of ship canals.

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* * In the current number of "Science" fresh interest is given to the subject of earthquakes which have lately caused alarm in both hemispheres, by a statement of the number of noticeable shocks in this country during the twelve years from 1872 to 1883, inclusive. No less than 364 earthquakes are recorded as occurring in Canada and the United States, not including Alaska, within the above period. Of these the Pacific slope had 154, the Atlantic coast 147, and the Mississippi Valley, 63. Thus it appears that an earthquake occurs about once in every twelve days somewhere in the United States and Canada, and about once a month on the Atlantic coast. These are exclusive of the lighter tremors which do not make an impression on observers, but which would be recorded by a properly constructed seismometer, an instrument designed to detect the slighter shocks.

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* * Railroad traveling is said to be injurious to vision on account of the vibration, which makes print dance before the eyes, and indues such intent observation as to produce fatigue. It is curious to note the eyes of one's fellow travelers who are looking out of the window during a rapid railway journey. The ever changing landscape induces an oscillation of the visual organs so incessant and continuous as to be perfectly astonishing. The effect of this exaggerated activity and restlessness may be, perhaps, more fatiguing than the steady perusal of well printed type. It is curious to note how some eyes engaged in looking upon this constantly shifting scene have momentary pauses in their labor, become motionless, as if staring into vabuity, nature thus snatching a few seconds of much needed rest, both for brain and eye.

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* * Photography is now turned to new uses in Paris courts in cases of alleged adulteration of pepper, farina, and other articles of commerce. Hitherto the evidence of experts who have examined such commodities with the microscope has been accepted as conclusive, but the new system introduced by the chemists of the municipal laboratory has changed the method of procedure. They now conduct their analysis of minute samples of commodities under a strong light, which permits the use of a photographic microscope. The photograph thus taken is sufficiently large to be easily inspected by the court, and thus the judge may be able to verify the investigations, and also give the prisoner the benefit of any mistake which may be discovered in the expert testimony.

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* * The Signal Service Office is planning a new means of acquiring knowledge about the weather. It is going to have five baloon ascensions made—two from Philadelphia and three from Washington—to study the upper air currents, and prove the truth or falsity of the theory that there are air strata moving regularly in given directions. No one has shown any particular interest in this subject since Aeronaut Wise's famous attempt to sail to Europe upon a steady current a dozen years ago. But the country will welcome any experiment that will instruct Gen. Hazen's assistants to stop advising people to take off ulsters and ear muffs just before the thermometer drops 30° or 40°.

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* * "The Great American Desert," as it was once called, including 40,000 or 50,000 square miles of land in Texas, New Mexico and Colorado, is made excellent grazing country and tillable by the wells sunk from its surface, an abundance of excellent water being easily found, which flows in all directions toward the depressions, forming streams which saturate the soil and render it productive. The Desert of Sahara is being made partially habitable, and the terrors have been removed from all the routes of travel across it, by flowing wells, of which a vast number have been bored by French traders and others interested in the traffic or Central Africa.

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* * Smoke is but incomplete combustion, and the only way to get rid of it is not to produce it. Mr. Siemens insists that this can only be effected by not permitting the flames to touch any object whatever. The current of air in the Siemens gas burner, which surrounds the flames on all sides, effects this object. Upon any object which penetrates or touches the flame carbon will be deposited in a quantity increasing according to the difference of temperature between the flame and the body brought in contact with it.

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* * The superiority of American dredging machines, which has been shown in the work on the Panama Canal, has led to orders for them by foreign governments. The last of these is from Spain. A drag boat, with a screw propeller of 100 horse power, five iron barges and two towboats have been called for, to be used at the port of San Juan, Porto Rico. Three months are allowed for sending in proposals, and eight months thereafter for building the apparatus.

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* * Artesian well experiments are being prosecuted in Asbury Park, N. J., where a test was made recently of a well's sufficiency as a supply for fire purposes. The engine at first pumped 84 gallons per minute, and afterward 100 gallons. The natural flow of the well is about 40,000 gallons per day. The test demonstrated that the flow could be increased by pumping to over 110,000 gallons per day.

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* * It is said that the work of enlarging the Dismal Swamp canal in Virginia, so as to make it a veritable ship canal, will begin early in the new year. Six years is the limit fixed for its completion.

Notes from the Trade.

A flour mill will probably be built in Warrior, Ala.

A flour mill will probably be built at Corning, Ark.

The new grist mill at Woodhull, Cnt., is nearly ready for grists.

Lately in Chase county, Kansas, a fine crib of sound corn of 10,000 bushels was sold for eight cents per bushel.

At Claremont, Ontario, Jan. 3, Russell's flour and oatmeal mill burned. The loss will be over $7,000; insurance, $3,080.

The Case Mfg. Co., Columbus, Ohio, have an order from Corl & Black, Canton, Ohio, for a patent automatic feed for their rolls.

Pease & Rubbe, Fairmount, Minn., have ordered a pair of rolls with patent automatic feed, from the Case Mfg. Co., Columbus, Ohio.

O. F. Barber, at Golden, Col., is building a new flour mill, which he will drive with a 75-horse power Westinghouse automatic engine.

The Heilman Machine Co., Evansville, Ind., have placed an order for a "Little Giant" break machine with the Case Mfg. Co., Columbus, O.

In the suit of the Northwestern Grain-dealers Association vs. the Northwestern Elevator company for $21,000, a verdict was given defendants.

Advices from India state that the receipts of wheat at Bombay between January 1 and November 4, show a decrease of 520,000 qrs. as compared with the corresponding period of last yeor.

A suit for $16,698, brought by the Northwestern Grain Dealers' Association against the Northwestern Elevator Company, has been on trial at Minneapolis.

The Case Mfg. Co., Columbus, O., have an order from W. M. Potts, Barnestown, Pa., for two pairs of rolls with automatic feed, and one 2-reel scalping chest.

Baer & Mohler, Covington, O., are making some changes in their mill, and have placed an order with the Case Mfg. Co., Columbus, Ohio, for breaks, rolls, purifiers, etc.

The Case Mfg. Co., Columbus, Ohio, have an order from N. Belford, Terril Hill, O., for a "Little Giant" break machine and four pairs of rolls, with patent automatic feed.

A fire at Shipman, Ill., January 7, destroyed Messick Schultz's flouring mills, the fire taking place in the engine room. There was an insurance of $2,000 on mill and $1,000 on contents.

The shipment of wheat from the two elevators in Jamestown, Dak., since the 1st of September, have amounted to 556 car loads of about 600 bushels, making an aggregate of 333,000 bushels.

The total receipts of grain at Buffalo by lake for the year, figuring flour as wheat, were nearly 70,000,000 bushels, 6,000,000 less than last year; but more than for either of the two preceding years.

At Stony Point, Cumberland county, Va., Jan. 12, the flour mills of "Nat" Palmer, burned, with a large quantity of flour and grain. The loss is $10,000. The fire is supposed to have been of incendiary origin.

One of the largest flour mills in St. Louis last year sent about 60 per cent. of its production to the Southern States, and it is estimated that nearly half of the flour made in St. Louis now is sold for Southern consumption.

Near Golden Gate, Col., Stein Holden, boring for water to supply a mill, struck a subterranean lake at a depth of thirty-five feet, which forced up water through the drill hole at the rate of seventy-nine cubic feet per minute.

The Boston Transcript says, the New England agent of the Washburn mill, Minnesota, advanced his price for flour twenty-five cents a barrel and refused some large offers at an advance. The flour market has evidently touched bottom.

The John T. Noye Manufacturing Company will ship a full-rigged and equipped roller mill to Japan next week. It is doubtful whether the Japs will get the hang of it unless it imitates their own inventions and stands upside down or runs backward.

The forthcoming report of the Illinois Department of Agriculture shows that the area of growing crop of winter wheat in Illinois is 2,317,000 acres, or a decrease of 405,000 acres from the previous seeding. The condition of the growing crop is fair

The Case Mfg. Co., Columbus, Ohio, have secured the contract of A. C. Strang & Co., Omaha, Neb., for a complete outfit of breaks, rolls, purifiers, scalping reels, bolting reels, etc., for a complete roller mill on the Case system, to be built at Scotia, Neb.

Ed Samuel has displayed on the floor of the St. Louis Merchants' Exchange a cable to the effect that the visible supply of flour was 2,000,000 barrels lighter than January 1, 1884. Prominent St. Louis millers agree in this estimate, some even placing the amount at 3,000,000 barrels.

The largest grain elevator in the Dominion, or the United States, is being erected at Fort William, Manitoba. Over 4,000,009 feet of lumber will be used, and it will contain 229 bins having a total capacity of 1,200,000 bushels. Eleven cars can be unloaded at once by the shovels which will be put in. It will be completed in February next.

In Kansas corn has been selling as low as ten cents a bushel, and farmers are using it as fuel. Millers refuse to reduce the price of flour, and complaint is made that the railroads help to keep the country poor by charging the same price for taking grain to market as when wheat was worth $1.25 a bushel, and corn was bringing forty to sixty cents.

The Pillsbury & Hulbert grain elevator at Dalton, Minn., caught fire a few days ago and burned to the ground. The elevator contained about ten thousand bushels of wheat, which will be a total loss. Several cars on the side track caught fire and burned also. The insurance on the elevator was probably sufficient to cover the loss on grain. The cause of the fire is unknown.

George B. Hamilton, one of the oldest residents of Dubuque, Iowa, and one of the most prominent and extensive grain dealers in the west, died about a week ago. He recently lost one speculation of $150,000, which has principally been the cause of his rapidly failing health and sudden demise. He was sixty-four years of age and was a native of New York. He leaves a wife and family.

In the handling of grain in Australia, elevators are not used, as in this country, the grain being unloaded from wagons upon platforms, or directly into short uninclosed cars which stand on the side-tracks ready to receive it. Fred H. Ritchie, of the Railroad Department of Victoria, writes: "I need not say that this system of loading grain compares unfavorably with the American modes of handling and conveying similar products. I have strongly recommended elevators to several of our grain merchants but they say it requires the farmers and ship agents to co-operate. I have no doubt it will come in time, but it takes time to get even colonials out of their jog trot English ways."

Two immense elevators have been built by the Canadian Pacific railroad last year—one at Fort William, holding 320,000 bushels, and the other at Port Arthur, with a capacity of one million bushels. Other elevators have been erected along the C. P. R. as follows: Manitou, 40,000 bushels; Merden, 55,000 bushels; Morris, 55,000 bushels; Moosomin, 45,000 bushels; Emerson, 27,000 bushels; Gretna, 26,000 bushels; Morris, 20,000 bushels; Manitou, 30,000 bushels; Carberry, 40,000 bushels; Griswold, 30,000 bushels; Virden, 20,000 bushels, and Indian Head, 50,000 bushels. There are other elevators at different points along the line of the Canadian Pacific, but they were built previous to last year.

The most unprecedented activity, of the larger wheat flour mills throughout the country the past two or three months, during a period of depression among most manufacturing industries, is sufficient to attract attention. An examination into the development of the export trade of the United States in wheat flour, according to *Bradstreet's*, reveals details respecting America's first place as a flour maker, which point to the following conclusions: First, that the consumption of bread in this country at least has not declined, notwithstanding the relatively high price (as compared with the cost of flour) demanded by bakers. Second, that more American-made flour is going abroad than ever. Third, that British millers are unable as yet to compete successfully with flour from the United States, notwithstanding their wide range of wheats from which to select a combination for grinding, and, fourth, that the increased annual shipments from the United States of wheat as flour bids fair, at the present rate of increase, to reverse the proportion (in value) now held by our wheat and flour shipments abroad.

Hulshizer & Buckman, grain commission merchants at No. 119 West street, New York, members of the Produce Exchange, have made an assignment to Charles R. Reeves, giving preferences to Peter Van Wagenen for $1,250, and Adaline Buckman $8,000. They have been in business many years, and had a capital of about $35,000. They were short of grain on the recent rise, which is ascribed as the cause of the failure. Mr. Hulshizer also had a manufacturing business under the style of the Lizzie Manufacturing Company, located near Phillipsburg, where he manufactured mineral pulp and white clay. Mr. Hulshizer said that several large accounts had been owing to the firm by embarrassed houses since the panic of May last, which Messrs. Hulshizer & Buckman have been unable to collect ever since. Much sympathy was felt for both partners by their colleagues on the floor. Mr. Hulshizer was the first Secretary of the Produce Exchange under its present charter, has been a member of the Board of Managers, is at present Chairman of the Grain Committee, and very popular with the members generally. The liabilities are about $60,000.

"It is estimated," says the Chicago *Tribune*, "that more than half the wheat lands of the west and northwest are mortgaged, the farmer paying eight to ten per cent. interest. Really, if the bonus paid for the loan is calculated, he is paying eleven to thirteen per cent. These morcgages were assumed on the basis of wheat at a dollar a bushel. The effect of the immense decline in the price of wheat at the places of production is to increase the proportionate size of the mortgage. Many farmers are paying interest on interest, as they have borrowed to meet their payments. The money they received upon the mortgages has usually been spent in breaking the land and meeting the expenses of living, all of which were scaled up to correspond to the high-pressure price of wheat. If wheat had continued high, no doubt they would have been able to emerge solvent from under their load of debts. But, as it is, these farmers in the northwest and west are borrowing money to live on and to meet the coupons on their mortgages by giving chattel-mortgages on tools, teams, grain and live stock. The strong demand for money at high rates in the wheat belt tells the whole story."

Lyman A. Spalding died suddenly at his home on Market street, Lockport, N. Y., January 7. Although for a week before he had been slightly indisposed, up to a late hour the night previous he was able to attend to business that required him to do writing. He was taken suddenly worse soon aiter retiring, and died shortly after. The deceased was born in Cayuga county, this state, in February, 1800, and was therefore nearly eighty-five years of age. Prior to 1822 he did business in Canandaigua. That year he went to Lockport, then an unpretensious village, and believing that the place was destined to flourish, he at once invested largely in real estate. He built a mill on the present site of the Chester & Wilson flouring mill. It was burned in 1840, and he rebuilt it the next year. In 1834 he established the iron foundry of the Pound Manufacturing Company, with which he was prominently identified up to the day of his death. He built two saw mills for sawing ship plank, and at one time owned a line of canal boats running between Lockport and Albany. From 1866 to 1871 he was postmaster of that city, and has been prominently identified with banking institutions. He was president of the Niagara County Pioneer Association in 1881-82. Three children survive him.

A rumor was started on the floor of the St. Louis Merchants' Exchange that J. B. M. Kehlor had bought the Planet Mill at Litchfield, Ill. When hunted down it was found to be true in substance, Mr. Kehlor being the prime mover in the Litchfield, Milling Company incorporated at Springfield, Ill., which has control of the Planet Mill. It is understodd that Mr. Kehlor is practically the whole company, the other incorporators—George W. Updike and D. L. Wing—having but a nominal interest. Mr. Updike was formerly Mr. Kehlor's partner, while Mr. Wing is the original builder and proprietor of the Planet Mill. Last summer he failed, but before doing so leased the mill to the Planet Milling Company, and was immediately installed as manager. The Planet Milling Company is now understood to be defunct, and the Litchfield Milling Company has come into possession of the property. The Planet Mill is one of the most complete pieces of property in the vicinity, being in some respects a model. Its capacity is about 1,000 barrels daily. Mr. Kehlor also owns the Laclede Mill, St. Louis, capacity 700 barrels, and a mill at Edwardsville, Ill., capacity 500. A mill belonging to him at Waterloo, Ill., recently burned, and Mr. Kehlor has been hesitating about rebuilding it. He now states that, having the Planet Mill, he would not build again at Waterloo.

The Crookston, Minn., *Journal* says: "We are glad that our neighbor recognizes the importance of the suggestion made by the *Journal* as to flouring mills, and we trust that the *News* will not cease to preach it until Duluth becomes what Nature intended her for and what she should be—the greatest flour manufactory in the world. Minneapolis, an inland city with her dozen mills, controls the wheat from a vast region of country and every poor farmer in the Northwest keenly feels how she abuses her trust. In order that wheat-raising may become profitable it is absolutely necessary that our wheat should be ground in this country before it has to be handled much. We can grind much of it ourselves but if there were mills enough at Duluth to grind the surplus the product could seek an eastern market by an all water route—as it should do, and the result would be to this country the wealth that she produces and deserves. Never, until just this thing is done can we expect to make wheat-raising a success, financially. Should this country use the means provided by Nature, there is no good reason why wheat should not always command as good a price in our home markets as it does in New York. Let Duluth build as many mills as she can; let the canal system between Duluth and this country be improved and then our wheat will bring just as much right here at home as it generally does in New York. Duluth has the opportunity to make of herself the most important flouring city in the world if she has the enterprise to do it.

Secretary Morgan has made public the amount of flour manufactured in St. Louis, during the past year. The Anchor Mill heads the list with 318,500 barrels, as compared with 278,640 last year and 196,350 in 1882. The Plant Mill, which is really in its first year, has made 213,692 barrels, and Stanard's Eagle Steam comes next with 199,921 barrels, an increase of 6,547 barrels over last year. Kehlor Bros., Kalbfleisch, Kauffmann and Sessinghaus fall behind this year, while the Cherry Street, Tuscan, Atlantic, Phœnix, Franklin, Union Steam and Empire have been idle for twelve months past. Still, with the addition of only Plant's Roller A and Egger's Meramec, completed November, 1883, the total number of barrels manufactured is 1,958,636 against 1,892,633 last year, an increase this season of 66,003 barrels. All but those mills mentioned above as idle are now running, and of these mills the Atlantic, now the Regina, will begin work in a few days, while the Union Steam is being torn down. Apropos of this there is trouble among the millers over the returns made and published the past year. Each year the Merchants' Exchange publishes a table of the manufactures of each mill for the year preceding, and the brethren take some little pride in the figures, providing their names are near the head of the list. This year some of them complain that others have made false returns, and threaten to report them to the Directors. As the returns are wholly voluntary it is not easily seen what action the board could take in the matter, but it would certainly seem advisable that some means be taken to prevent falsification of the Exchange statistics. It is reported further that a formal complaint has been made out against John Crangle, of the Anchor Mill, and D. L. Wing, of the Planet Mill, who are alleged to have made false returns to the Secretary of the Exchange of flour manufactured by them during the past year. The complaint is signed by several millers. It is not known as yet whether it will be presented to the Board of Directors, as no clause can be found in the rules of the Exchange applicable to the case. Under the causes for discipline are mentioned: "When any member shall be found guilty of obtaining property upon false representation, or when any member shall be found guilty of making false or fictitious reports of sales or purchases; or where any member shall be found guilty of any act of bad faith or of any act of a criminal nature," the penalty in each case being censure, suspension or expulsion by the Board of Directors. As it is doubtful whether any of these offenses include the one of which Messrs. Crangle and Wing are accused it is not unlikely that the rules will be amended so as to include hereafter the making of false returns.

The Merchant's Exchange, of this city, at a special meeting in memory of the death of Jeremiam L. Ring, a member of the Exchange, and president of the Atlas Milling Co., Mr. A. P. Wright presided, and the following resolutions of respect were adopted:

We, the undersigned, the committee appointed to prepare resolutions to be presented to the members of the Exchange commemorative of the death of Jeremiah L. Ring, President of the Atlas Milling Company, which event occurred on Monday, January 5th, do report as follows: Again has death called us to mourn the loss of one of our most esteemed members, Jeremiah L. Ring. It is with deep sorrow that the Exchange records this sad tribute of affection and esteem to his memory. He possessed in the fullest degree all the noblest qualities of manhood, endearing himself to us in our associations with him by his strict integrity, kindheartedness, and unvarying courtesy in intercourse with others.

Resolved, That in the death of Jeremiah L. Ring the Exchange has sustained a great loss; a loss fully realized and deeply felt by all who had business relations with him.

Resolved, That this Exchange tender to the family of its late associate its sincere sympathy in their great bereavement.

Resolved, That the Secretary send a copy of the foregoing preamble and resolutions to the family.

GEORGE URBAN, JR.,
H. J. HARVEY,
S. S. BROWN,
Committee.

From Foreign Lands

A COUPLE OF ENGLISH MILLS.

JOHN HILL'S MILLS AT DURHAM.

IN these times of so much complaint about bad trade and decay of local as well as national industries, it is cheering to observe any signs of prosperity and business-like enterprise. In a very marked degree the spirit of confidence and of enterprise which is born of an energetic determination to succeed and to keep pace with the improvements of the age is being displayed at present by our townsman, Mr. John Hill, at his flour mills, North Road. These mills have been in existence for a period of about 56 years, and during that period they have, of course, undergone many additions and improvements. But under Mr. Hill's management and proprietary their progress has been steady, and he has now been fitting them up with the finest machinery extant, placing them on a level with the best flour mills in the country. One whose early years have been passed in a rural district where the huge sails of the windmill and the splash of the water on the wooden mill-wheel were the most familiar of sights and sounds, and where the rudest of millstones and the plainest sieves were all that was employed to change the wheat into flour and the oats into meal, is almost dazed with surprise by the complexity of mechanism which meets the eye on entering the North Road Mills. True, all aspect of that picturesque, dreamy romance is wanting here which the poet and the painter have so persistently grouped around the miller and the mill. There is no crystal mill-stream, purling through shady woods, between flowery banks, and dashing into silvery spray over the huge old wheel. There are no over-hanging leafy boughs to catch the snowy particles which are wafted with every breath from the windows of the mill. All is plain, energetic, business-like, and thoroughly in keeping with those materialistic, practical tendencies which, while they drive out the drowsy lingering fancies of the past, create conditions much more in keeping with the requirements of the present. The North Road Mills will now consist of three main buildings. The central block, which is really the old mill, will for the future be used almost wholly for storing purposes, while in the block situate furthest from the roadway is the greater part of the new machinery just introduced, the engines and some other machinery being in the third division. We have said that the most recent and most approved machinery has been introduced. It is the patent of Messrs. Seck Brothers, whose English headquarters are in Mark Lane, London, but who have large works in Bockenheim, Germany. The process is of German invention, and while to the observer who looks on it without the capability of taking an expert mechanic's full and comprehensive grasp of its every detail, the machinery appears complicated in the extreme, it is on examination seen to be not more so than is needful to a full and perfect peformance of the requirements of the miller. To describe the various apparatus in detail would be a lengthy task, and one not probably very intelligible without the aid of diagrams, but a general outline of the process may be at once comprehensive and instructive. To follow somewhat of a natural order, then, let it be remarked first that the motive power which takes the place of the "Old mill stream" is derived from one of the finest engines in the north, a horizontal high pressure engine of 60 h. p., fitted with two what is known as Lancashire boilers, expansive slide, and all recent improvements. This engine has been in use for several years, and has just been altered so far as necessary to suit it to the requirements of the new machinery. The power is transmitted by a series of powerful cog wheels to a main shaft, which runs from end to end of the old mill building, and which was formerly used for the milling stones. Thence the power is conveyed by a 12-inch driving belt, which passes through the wall into that portion of the block of buildings used for the milling machinery proper. From the central building, or store-rooms, the grain in its rough state passes through a species of elevators to the wheat-cleansing department, which is entirely separated from the rest of the building by iron fire-proof doors. Here it is first received in a separator, passing thence through two aspirators, next through a "Victora" screen, and finally into a brusher, where a cylindrical brush, moving on a perforated screen, finally and thoroughly cleanses the grain, and fits it for the crushing process. From the receptacle below the brusher the grain is carried by three sets of elevators through the wall of the cleaning department, along the store-room, and on to the milling-rooms. The elevators, of which there are in all twenty-one sets, are running from top to bottom of the buiiing, and by their means the wheat and all other broken and reduced material in its different stages of conversion into flour is passed on from one machine to another, practically unseen and untouched till it is filled into the sacks in the finished condition. At the next point of interest, on the second floor of the milling department, we find a number of sets of rollers, each with its own belt. These are what are called "break reduction rollers." The grain passes from the elevator which has conducted it from the cleaning department into the first set of the "breaks." In connection with each breaking is a scalping reel, and on the end of each are discharged the rough particles which pass from the first to the last "break," getting smaller each time as they are passing the "break" rollers. The meal of all the scalpers is conveyed to a grader, which separates flour and middlings, and discharges over the end all different sizes of uncleaned semolina, which passes from there to a semolina sizing reel. The flour taken out by the grader is conveyed into a centrifugal. The middlings of the break flour are brought to the middlings purifiers. Underneath the semolina sizer are a number of sieve semolina purifiers. The purified semolina is then brought forward to the first reduction rollers. The purified semolina is divided into two distinct classes, viz., into large and small semolina. For reducing semolina and middlings into flour smooth rollers are used. Both classes of semolina, worked, by separate rollers, pass a scalping centrifugal, which discharges over the end germy and branny particles, which are conveyed from there direct to the germ rollers. The meal from the scalping centrifugal is passed into a flour centrifugal, and the tailings of this flour centrifugal, which are very good middlings, pass a middlings purifier, and from there to the second reduction. Now the process is repeated till it comes to the sixth reduction, and from there the most part of fine sharps are received. The germ rollers have a scalping and flour centrifugal, and there we could see small bran coming off broad bran, to be found after the sixth breaking. All the offals mentioned are brought into a bran stripper, where they are divided into four different sorts. The flour manufactured under this process is entirely on the Hungarian principle, and is divided into patent and baker's flour, and is collected by a conveyor, and brought into a rebolting reel, which is really the last process of the manufacture.—Durham Chronicle.

JAS. RYDER'S MILLS, MONKWEARMOUTH

It is just about nine months ago since Mr. James Ryder's large flour mill in Wilson street, Monkwearmouth, was burned to the ground. Our readers will remember the occasion, for the contents of the mill, being of a most inflammable nature, the conflagration was one which has seldom been surpassed in Sunderland. On the foundation of the old structure, which was completely gutted, a new building has been created and for more than a week Mr. Ryder has been continuing there the large business which was formerly conducted in Wilson street. An important change has taken place. We do not refer to the rebuilding of the premises—though in that respect also a great alteration has been made; but to the fact that the manufacturing work which will now be accomplished by Mr. Ryder will be upon the new Hungarian principle. The old system of making flour was by means of the grinding stones; the new system is the use of rollers instead of stones. With the former there was a certain amount of friction, which was injurious to the product both in respect of strength and color; whereas under the latter this deadening agent is prevented from exercising any influence, and the character of the flour is considerably improved. An entirely new set of machinery, constituting a six-break roller mill, has been supplied and erected by Mr. Charles Hopkinson, engineer and millwright, Retford; and now equipped in the latest and most improved style the firm may congratulate themselves on having one of the finest fitted mills in the country. The quality of the machinery and the extent of their operations may be gauged by the fact that the mills are capable of turning out about 1,200 sacks per week.

Before speaking of the particular pieces of machinery which perform their duties in the respective floors of the building, let us briefly and simply describe the process of manufacture under this new Hungarian principle. It will, perhaps, be somewhat difficult to do this in such a way as to make it plain to the ordinary reader, but the initiated will thoroughly understand what is meant, and those who are not mechanically inclined may find it a useful study.

First of all the wheat is put into garners, from which it goes on to an aspirator, and then drops upon a revolving screen, and afterwards upon a revolving brush. Then it is carried up into a second set of garners, from which it falls into a wheat-sizer, and then it is conveyed to a three-high roller mill, where the first and second breaks are made. The broken wheat is then, by means of elevators, raised to the top of the building, where it goes through a scalper which extracts the blue flour. It now drops into a two-high roller mill, where it receives the third break; and after being put through another set of scalpers is dressed, and falls into the fourth break, another two-high roller mill. Once more it goes through the scalpers, and then it is carried down to another mill, where it receives the fifth break. From here the bran is conveyed through a special set of machinery in which it is dusted and finished. The semolina is brought up from the fifth roller mill into a dust reel, from which it drops into the purifiers. After undergoing a searching process here, it is carried direct to the smooth roller mill. It is then brought up again, dressed, and conveyed to the first and second reduction roller mill. What is known as the "tail end," is carried on to the next roller mill, is brought up and dressed in like manner, the "tail end" of the third is purified and carried on to the fourth reduction mill, and so on until the whole is finished. There are thus, it will be seen, six break roller mills and an equal number of reduction roller mills, besides the purifiers, screen, scalpers, and other mechanism, employed in the manufacture of the finished article.

Let us now have a look through the large building in which this process is carried out. On the third or top floor there are a couple of chop reels and a dusting centrifugal, with elevators bringing the wheat and flour up to the machines. There is also a powerful fan sucking the air from a revolving stive collector, and a new friction hoist for raising the wheat from the bottom to the top of the mill. The axle of one wheel is fixed in a sliding pedestal, and when a lever is used the pulley on this axle is brought into contact with a running one, and so the motive power of the friction hoist is produced. On the second floor there is a large stive collector, working from no less than five purifiers. The collector, from which the fan on the floor above is sucking the air, is 21 feet in length, 4 feet wide, and 8 feet high, and contains a 40 inch reel. On this reel there is a flannel which prevents the stive being carried up by the fan and blown away. It sticks to the flannel, from which, as it accumulates, it drops on to a conveyor, and is run into bags below and used as pigs' feed. On this floor there is also a sizing reel for sizing the middlings. They drop from this reel on to the purifiers, from which they proceed to the roller mills to undergo their first and second reduction. The partially manufactured article is then brought up again to this floor, where it goes into a three sheet centrifugal, and is dressed; the "tail end" dropping on to a purifier, and from thence proceeding to the roller mill. On the same floor is another fan, sucking the grays out of the middlings from the sizing reel; and on the same level there is also the aspirator room. It may be briefly stated that on this floor there are six centrifugal dressing machines with all the necessary conveyors and elevators attached.

On the first floor there are three eight-valve blast and exhaust middlings purifiers, and two purifiers working off the "tail ends," of all the silks, one of these machines being very large and provided with an extra double fan. There is also a bran duster for separating the various grades of bran, and on this floor is the screen room. All the machinery on this floor and above is driven from a main line shaft on this floor. On the ground floor of the building are the roller mills, both smooth and corrugated. They are powerful and excellently finished pieces of mechanism, and perform their work with great rapidity. The rollers are about two feet long and about 16 inches in diameter. The whole of the machinery is driven from two powerful pulleys direct from one of Hackworth's patent engines. To the west of the mill proper are extensive warehouses which contain wheat-cleaning and other machines.—Sunderland Echo and Times.

INDIA AND MARK LANE.

While our Granger friends, says the New York "Commercial Bulletin" are threatening a new campaign in their State Legislatures, that have just assembled, against the railroad corporations of the Northwest, professedly for the purpose of compelling a reduction of freight rates proportionate to the shrinkage of the market value of farm products, they will make a capital mistake —in their calculations for the future—if they overlook or undervalue the incidental importance to them and their interests of the renewed vigor with which railway construction is now being pushed in India, in the expectation of making that country at an early day "the granary of Europe." The subject is by no means a new one, but it is having a new development of which it is well to take cognizance. In itself the phrase is as significant as it is ominous. If India is to become "the granary of Europe," it is a live question, what is to be done with our surplus wheat and corn, which even now the Grangers tell us cannot be sold save at a price which barely covers cost of production?

Complaints as to alleged excessive charges of the railroads will not materially help their

case as against foreign competition, for even if they succeed by legislative processes in forcing down freight rates a few points, that competition will still be confronting them in the European markets; and as no State legislatures can restrain or control that, these bodies after all, it will be discovered, are incompetent to deal with the difficulty in its larger international aspects, or with reference to permanent effects. The legislatures are powerless to impair the favorable natural conditions for realizing the British dream of making India "the granary of Europe;" and they are not less impotent for diminishing either the inexhaustible supply of cheap labor or the liberal investments of English capital that are providing transportation facilities for bringing the wheat fields of Hindostan within call of Mark Lane. These are unpalatable facts, but they have got to be recognized and met. Under these circumstances, a sound philosophy would suggest that the at present somewhat intemperate Granger indignation against the railroads, which are scrambling for business on a 15 or 20 cent basis, might be judiciously divided, so as to cover the broader question, whether the time is not at hand when colossal wheat farming will cease to pay, and when the products of the soil will have to be diversified in order to meet and keep up with the changed conditions of international competition? If we could brush away the wheat fields of India, Southern Russia, the River Plate, and other countries that have a quotation in London, all would be well. We should then have a monopoly of the world's foodstuffs. But if there has been any dream of that kind, it had better be dismissed. We may get up an occasional corner at Chicago, or in New York; but vast as our resources are, and ingenious and various as are our devices for monopolizing things, we cannot corner the whole world. It is too big a job. True, the granger is an important factor in domestic economics; but does it ever occur to him that the world, outside of his own country, may contrive somehow to get on without him?

Meanwhile, there is abundant matter for reflection in a report which comes to us by the latest English mail, in the shape of a report from the Select Committee recently appointed by the House of Commons "to inquire into and report upon the necessity for more rapid extension of railway communication in India, and the means by which this object may be best accomplished." Included in the Committee were such well-known members of Parliament as Mr. Justin McCarthy, Mr. Stagg, Lord George Hamilton, Mr. Baxter, Mr. Onslow and Mr. Edward Stanhope. Their report, minutes of evidence, and appendices extend altogether to 952 pages, and the result of their labors may be summed up in the statement that "the evidence in favor of a more rapid extension of railway communication is pronounced conclusive." In the first instance, they recapitulate the chief recommendations of the India Railway Committee of 1878–9, which, in brief, were—first, that loans for the future should be spent upon productive works, and second, that the loans for such works should, as a rule, be raised in India itself. The Committee of 1878–9, however, made no provision for railway extension; the guarantee system, in fact, was at that time treated as expiring. The proposed policy of the Government of India is to leave to private enterprise those lines which are commercially most attractive, and to construct either directly by the State, or indirectly through the agency of companies, those which are, relatively speaking, unprofitable, but which they consider to be indispensable for protection against famine, or for other urgent purposes. In criticism of that policy, the committee now point out that it implies a complete inversion of the regulations hitherto in force, for loans would be applied to unproductive works, and the famine grant would in part be used as interest on borrowed capital. They then proceed to sum up the grounds on which the various witnesses have urged the more rapid construction of railways, and it is this point that possesses the most direct American interest.

In the first place, it is asserted that there is an urgent necessity for increasing the works likely to protect the country against famine, General Strachey and Sir James Caird having given it as their opinion that there is no other means of saving life in time of famine so efficient and economical as railways. Next may be placed the development of the internal trade of India, with the result, among others, of reducing the price of salt and other necessary articles of consumption. But the point on which the greatest stress is laid, was the rapid development of the export trade in recent years, especially wheat. Of this fact (we quote from the report) "the tables of export show striking proof, the average annual value of the exports having risen from £57,770,000 in the period from 1864 to 1868, to £69,980,000 in that from 1879 to 1883; while in 1883-4 the exports amounted to £88,076,000. In regard to the exportation of wheat in particular, the development of the trade has been even more remarkable, the quantity having risen from an average of 4,544,000 cwt., valued at £1,951,000, in the five years from 1876-77 to 1880-81, to 19,901,000 cwt., valued at £8,870,000, in 1881-2, and to 20,961,000 cwt., valued at £8,880,000 in 1883-4." Again, the improvement which has taken place in the credit of the Government of India in the London money market will enable it now to borrow the requisite capital at a much cheaper rate than was formerly the case; and if guarantees have to be given to companies, it is no longer necessary to offer the high rate of 5 per cent. formerly given. These are the salient points of the committee's report. We need not pursue the subject further than simply to commend the result of their inquiries to the consideration of not only our Granger friends, but of all who are desirous that our foreign export trade in its future aspects should not be condemned as it were to stand on one leg; in other words, that it should not be so largely restricted to agriculture, while the products of American ingenuity and skilled industry in a wide range of manufactures are practically condemned to the home market. If the cheap labor of India and other grain-raising countries, supplemented by cheap and rapid steam transportation, are to place us at a disadvantage in the foreign grain markets, is it not the dictate of a prudent foresight to readjust our economic system so as to have something to sell in place of wheat and corn when these are no longer wanted?

REPORTS FROM MILLING CENTERS IN GERMANY, FOR THE THIRD QUARTER OF 1884.

[From *Die Muehle.*]

Breslau.—The mills in this locality profited by the constant calm and the low water in the water courses, which prevented the numerous small mills from working. The demand for flour, especially for high grade rye flour was larger than the supply and only the immediate vicinity was able to obtain as much as wanted. On the whole the prospects for the rye millers in this vicinity for the nearest future, are fair; purchasers hold but little stock on hand and the demand will increase rather than decrease. The business in wheat flour is not as favorable, because it depends upon the export, and the rich harvests as well as the closest competition have excluded our products from the markets. Even our constant market at Berlin suffered, because the mills at the seaports, able to obtain cheaper foreign grains, produced flour at lower prices than our mills. This, however, applied only to the high grade flours, because lower grades, meals and feeds always found a ready sale.

Frankfurt on the Oder.—The large mills of our vicinity, which had large stores of wheat on hand when the prices fell, have all suffered heavily.

Kassel.—Our milling industry has done fairly well; especially the larger establishments which had contracts on hand several months ahead, obtained a good profit from the decreasing prices of grain.

Munich.—Flour business was dull, due to overproduction on one, and Hungarian competition on the other hand, and in part influenced by the abundant potatoe and fruit harvest which reduced the consumption of flour.

Muenster.—Our mills were fairly active, but the profits were small due to the low prices of the grain and diminished demand for meal and feed.

Osnabrueck.—Our milling industry has to record a poor year, and many of the estabments had to curtail their capacity. The prospects of a rich harvest had a depressing influence upon the milling products from the beginning, and the future does not look bright, as the competition with the large foreign mills becomes closer from year to year.

California grain growers have a reaping machine which requires twenty mules to propel it. The machine is called a header, in that it cuts off the heads of the wheat stalks, taking in as little of the straw as is possible. The heads are carried on an endless belt to a cylinder, where they are threshed and afterwards cleaned. The grain is run into sacks, the sacks tied up and left on the ground, to be gathered up by wagons. These combined harvesting and threshing machines are yearly becoming more popular, although they cost two thousand dollars each.

THE Grain and Flour Trade

Office of THE MILLING WORLD,
Buffalo, N. Y., Jan. 14, 1885.

The wheat market again shows symptoms of weakness, but there seems to be no apprehension of values receding to the level which characterized the close of the year. Purchases on foreign account are at the moment meagre, while demand for milling purposes is conspicuous chiefly by absence, and operations may be said to be confined almost wholly to scalping.

The decline in the price of wheat would of course naturally have an unfavorable influence on the flour market, but as receipts of flour are running light and the stock decreasing, holders are disposed to take a comfortable view of the situation at large, with their advices from the West as firm as ever and millers insisting upon full prices; this for the market in the main, while in some cases holders are inclined to sell and the flour market is a little irregular without being quotably lower. The demand from exporters is only moderately active and the local jobers are cautious buyers. The demand for rye flour has been fairly active and the market continues strong in tone at current quotations. Buckwheat flour is in light demand and, without decided change in prices, the market is easier in tone; $1.75a. 1.95 is the range for the general business, and $2.00 an extreme price for fancy lots. For corn goods there is a slow demand and the market shows a feeble tone. Mill feed is fairly active at full figures, with coarse feed firm and scarce, track receipts light, and offerings moderate.

BUFFALO MARKETS.

FLOUR—City ground clear Northern Pacific spring $4.75@5.25; straight NorthernPacific spring, $5.25@5.75; amber, $5.00@5.25; white winter, $5.00@5.25; new process, $5.50@6.00; Graham flour, $4.25@4.50. Western straight Minnesota bakers, $5.00@5.25; clear do, $4.75 @5.25; white winter, $5.00@5.25; new process, $6.00@ 6.25; low grade flour, $2.50@4.75. OATMEAL—Ingersol $5.75; Bannerman's $6.00; Akron $6.25. CORN-MEAL—Coarse, 90c; fine, $1.10 per cwt. RYE FLOUR—In fair demand $3.50@3.75. WHEAT—Nominal. No. 1 hard Northern Pacific at 94c. cash: at the Call Board 95c, for car-lots, 94½c. asked Jan., 95c. bid Feb., 96c. bid April, 97c. asked 95c. bid May, 98c. asked 97c. bid June. No. 2 red offered at 93c. and 90c. bid; for No. 1 white, 94½c. asked, 90c. bid. CORN —Quiet. Sales five car-loads No. 2 at 47½c. and six do. No. 3 yellow at 46½@47c. OATS—Steady. Sale 3,000 bu. No. 2 at 34½@34c. BARLEY—Firm. Sale five car-loads two-rowed State at 55c. on track. RYE —Better. Sale two car-loads No. 2 Western at 68c. on track.

FOREIGN EXCHANGE.

Quiet and fairly steady. Posted rates closed at 4.82 and 4.86. Actual rates were: 4.81a.4.81¼ for sixty days', 4.85 a.4.85¼ for demand, 4.85¾a.4.86 for cables and 4.79¾a.4.80 for commercial bills. Continental bills were very quiet and quoted as follows: Francs, 5.25a.5.24⅜ and 5.21¼a.5.20⅝; reichsmarks, 94¼a 94⅜ and 94⅞a.95; guilders, 39⅞ and 40⅛. The closing posted rates were as follows:

	60 days.	30 days.
London	4 82	4 86
Paris francs	5 23⅛	5 20
Geneva	5 22½	5 19⅜
Berlin, reichsmarks	94⅝	95¼
Amsterdam, guilders	40	40¼

ENGLAND'S BUCKET SHOPS.

The "bucket shop," it may not be generally known, flourishes in London to such an extent as to throw the New York institution quite into the shade; and there, as here, we perceive the Stock Exchange is at its wit's ends to know how to suppress it. According to the London Times' money article, there are no fewer than ten of these establishments in full blast within sight of the exchange, with some thirty or more in addition in out of the way places. What is more, the bucket shops do "business" at lower rates than are charged at the Exchange; and this, it is alleged, is gradually diverting from the latter a good deal of business, small in itself, but in the aggregate not to be despised. The remedy suggested is that the prices which are taken from the Stock Exchange should only be furnished to its own members, or, at all events, only to such other mercantile firms as may be approved of. The Times is disposed to think that while the "tape" is largely responsible for the bucket shops, it is doubtful whether the measure proposed would reach the case, even if it should prove to be practicable, which is by no means certain. "Its adoption," we are told, "would not tend to increase the popularity of the Stock Exchange, as it would inevitably be represented as a piece of trades-unionism."

RAILWAY GRAIN MOVEMENTS.

One of the encouraging new developments is a recognition, by a Kansas railway commissioner, of the force of the theory that reduction in grain rates, by the roads leading from Kansas to Chicago and St. Louis, would probably render no substantial service to wheat growers, and might, perhaps, even injure them, by helping to create a glut in markets previously overstocked, and precipitating a new decline in the current price of wheat. Thus the Railway World begins an article upon the above subject.

The general drift of recent discussions before western and north-western granger railway commissioners indicates not only that representatives of railway interests have the best of the argument, but that the force of their statements is more fully recognized now than during previous agitations. A recent advance in the price of wheat may help to strengthen western faith in the views announced by a number of the managers of railways that traverse great wheat-growing districts. Such an advance would obviously have been improbable, if extraordinary reductions in grain-rates had been made some weeks ago. The rates have evidently not been too high to prevent larger fall shipments of wheat to the principal western centres in 1884, than those which occurred in previous years. During the period from September 1st to December 27th, the receipts were 43,363,209 bushels, against 38,528,722 bushels in 1883, and 37,681,864 bushels in 1882.

It is unfortunately too true that much of the wheat forwarded in 1884, was sold at rates that left little or no margin for profit to the farmers, and it is stated that, on account of the low prevailing, and maintenance of rail rates, an unusually large proportion of the producers have retained possession of their crops.

While the movement of wheat to the western centres was larger in 1884 than in previous years, the east-bound shipments show a slight decline. From September 1st to December 29th they were 19,613,153 bushels in 1884, 20,238,568 bushels in 1883, and 22,627,045 in 1882. Although the dominant tendencies favored an increase of shipments to western centres, they discouraged shipments to Atlantic ports, notwithstanding the low rates that prevailed on the lakes and canals while they remained open, and on the trunk lines up to a recent period. As the wheat surplus of 1884 exceeds that of 1883 by 100,000,000 bushels, it seems probable that a very large increase in the shipments to the Atlantic ports will occur during the present year, and it may come at times and under conditions that will have a favorable effect on trunk-line revenues.

The fall movements of corn to western centres, unlike those of wheat, were smaller in 1884 than in previous years. During the period from September 1st to December 27th, they were 27,784,791 bushels in 1884, against 38,334,828 bushels in 1883, and 35,-722,700 bushels in 1882. This decline is doubtless due, mainly, to the comparatively late date at which shipments of new corn commence, and the poor character of the crops of 1883. The industrial and trade significance of the splendid corn crop of 1884, has not yet been practically exemplified to a considerable extent. It may furnish a factor of improvement in railway revenues, and in increasing general prosperity, of great importance. The fact that the greatest crop of the country was unusually large and of superior quality, furnishes substantial grounds for hopeful anticipations It is, in some respects, not to be regretted, that a large proportion of the corn produced is consumed on or near the places of production. In any event a good crop contributes to the domestic comfort of a large proportion of all the farmers of the country, and corn can be used in so many ways that there is a comparatively slight necessity for forwarding a surplus at times when very low prices prevail. But of the 1,800,000,-000 bushels raised last year, much more could be spared then of the wheat crop, if the inducements for shipping were sufficiently attractive. And it is one of the possibilities of 1885 that more corn will be exported than in any previous year. A sign of the times which may possess considerable significance is furnished by an Omaha dispatch, dated January 3d, which says: "The movement of corn from Nebraska, and especially from the Republican valley, has begun in earnest, and the volumes now going to the various markets are something remarkable. Both the Burlington and Missouri river and the Union Pacific are unable to meet the demands made for cars. The reason assigned is that the farmers can hold out no longer, being compelled to sell to pay taxes and meet current expenses. A heavy movement of wheat is expected in a few days."

No important article of export has varied so greatly, in the quantities sent abroad, during late years, as corn. The poor crop of 1883 led to an advance in prices far above the usual standard and reduced exports. The diminution in fall eastbound shipments of corn from the western centres was much greater than the diminution in wheat shipments. During the period from September 1st to December 29th, the corn shipments were 15,805,086 bushels in 1884, 31,358,476 bushels in 1883, and 19,761,726 in 1882. A basis has been established for a marked increase in corn shipments to the Atlantic ports, and an important gain in trunk-line revenues may be derived from such a movement.

Stock operations often hinge on hopes of the future which cannot be speedily realized. Railway revenues depend on actual trade transactions. The effect of bounteous crops was discounted in speculative circles soon after a large yield was assured. The transportation earnings derived from crop movements have not, hitherto, increased to the extent anticipated. But a change for the better in this important matter, may soon occur in various quarters, particularly in connection with the movement of corn, and to some extent also, in connection with the movement of wheat.

The official report of exports of breadstuffs from the leading ports of the United States during the eleven months ended November 30th, 1884, shows that their value was $131,960,030, against $156,793,617 during the same period in 1883. The decline of $27,833,587 was caused partly by a decrease in the value of wheat and wheat flour, and partly by a large diminution in the quantity of corn exported. The exports of wheat were larger in the first eleven months of 1884, than during the corresponding period of 1883, the increase being from 64,245,126 bushels to 71,173,029 bushels, and the exports of wheat flour only declined from 8,099,969 barrels in 1883 to 7,974,000 barrels in 1884, but there was a considerable falling off in prices, the value of the wheat exports of 1884 being $66,-402,412, against $71,783,672 in 1883, and the value of the exports of wheat flour declining from $46,577,188 in 1883, to $42,685,488. Of corn, 57,834,345 bushels, valued at $37,159,383, were exported during the first eleven months of 1883, and the exports during the corresponding period of 1884, consisted of 27,737,370 bushels, valued at $16,905,616. There was a falling off of more than one-half, both in value and quantity. A marked gain in the movement of corn is one of the possibilities of the present year.

The value of the exports of breadstuffs at the principal ports during the first eleven months of 1884 was as follows: New York, $51,590,853; New Orleans, $8,933,158; Baltimore, $19,885,056; Boston, $16,717,365; Philadelphia, $7,724,443; San Francisco, $19,814,409; other ports, $12,794,746. As compared with the corresponding period of 1883, there was a decline in the exports from all points named except Boston and "other ports."

The visible supply of grain on December 29, 1884, consisted of 43,382,190 bushels of wheat, 4,124,812 bushels of corn, and 2,319,974 bushels of oats. At the corresponding period of 1883 it consisted of 25,507,400 bushels of wheat, 9,695,044 bushels of corn, and 6,229,842 bushels of oats. The supply of wheat in the most prominent points, on December 29th, was as follows: New York, 9,105,525 bushels; Buffalo, 2,455,000; Chicago, 13,479,785; Milwaukee, 3,649,190; Duluth, 4,435,870; Toledo, 2,805,735; St. Louis, 2,502,258; Philadelphia, 1,108,135; Kansas City, 844,-609; Baltimore, $871,190.